Vol. 996 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 1, 1980

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 1, 1980 Volume 996 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	8.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 28, 1980.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,739,944, Re. S.N. 129,394, Filed Mar. 11, 1980, Cl. 241/74, APPARATUS FOR PRODUCING DE-BONED MEAT PRODUCTS, Archie Rae McFarland, Owner of Record: *Beehive Machinery Inc., Salt Lake City, Utah,* Attorney or Agent: Philip A. Mallinckrodt, et al., Ex. Gp.: 322

3,757,818, Re. S.N. 082,599, Filed Oct. 9, 1979, Cl. 137/596.16, SAFETY CONTROL VALVE SYSTEM FOR FLUID ACTUATED DEVICES, Roger L. Sweet, Owner of Record: *Ross Operating Valve Company, Detroit, Mich.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 341

4,088,543, Re. S.N. 145,403, Filed May 1, 1980, Cl. 204/1 T, TECHNIQUE FOR PROTECTING SENSING ELECTRODES IN SULFIDING ENVIRONMENTS, Roswell J. Ruka, Owner of Record: *Westinghouse Electric Corporation, Pittsburgh, Pa.,* Attorney or Agent: C. F. Renz, et al., Ex. Gp.: 114

4,089,366, Re. S.N. 116,545, Filed Mar. 12, 1980, Cl. 165/1, MEANS AND METHODS FOR SENDING HEAT DOWNWARDLY, Edward J. O'Hanlon, Owner of Record: *Inventor,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 345

4,109,716, Re. S.N. 141,069, Filed Apr. 17, 1980, Cl. 166/191, SEAL, Carlos R. Canalizo, Owner of Record: *Otis Engineering Corporation, Dallas, Tex.,* Attorney or Agent: Joe E. Edwards, et al., Ex. Gp.: 354

4,128,686, Re. S.N. 123,426, Filed Feb. 21, 1980, Cl. 428/219, MANAGEMENT OF INCONTINENCE, William Kyle, et al., Owner of Record: *Nicholas Proprietary Limited, Victoria, Australia,* Attorney or Agent: James R. Longacre, Ex. Gp.: 164

4,142,880, Re. S.N. 125,609, Filed Feb. 28, 1980, Cl. 65/29, METHOD AND APPARATUS FOR FEEDING A GLASS MELTING FURNACE, Alojzy Wenda, et al., Owner of Record: *Johns-Manville Corporation, Jefferson, Colo.,* Attorney or Agent: Robert M. Krone, et al., Ex. Gp.: 173

4,145,633, Re. S.N. 141,070, Filed Apr. 17, 1980, Cl. 313/422, MODULAR GUIDED BEAM FLAT DISPLAY DEVICE, Kenneth Donald Peters, et al., Owner of Record: *RCA Corporation, Princeton, N.J.,* Attorney or Agent: Eugene M. Whitacre, et al., Ex. Gp.: 256

4,153,485, Re. S.N. 141,619, Filed Apr. 18, 1980, Cl. 148/126, PROCESS FOR HEATING STEEL POWDER COMPACT, Kazuo Ogata, et al., Owner of Record: *Kobe Steel, Ltd., Kobe, Japan,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 223

PATENT NOTICES

Certificates of Correction for the Week of July 1, 1980

Re. 30,177	4,175,394	4,187,509	4,194,437
Re. 30,186	4,175,557	4,187,594	4,195,056
Re. 30,193	4,176,062	4,187,827	4,195,185
3,960,347	4,176,717	4,188,409	4,195,609
3,971,988	4,176,923	4,188,566	4,195,665
3,980,660	4,178,511	4,188,586	4,195,742
3,984,473	4,178,657	4,188,601	4,195,937
4,020,085	4,178,712	4,188,755	4,196,226
4,045,228	4,179,224	4,188,871	4,196,278
4,056,862	4,179,415	4,189,280	4,196,469
4,101,609	4,179,442	4,189,279	4,196,630
4,105,034	4,180,123	4,189,469	4,197,305
4,111,865	4,180,463	4,189,606	4,197,593
4,120,582	4,180,692	4,189,804	4,197,866
4,140,440	4,180,998	4,189,929	4,198,453
4,141,572	4,181,002	4,189,973	4,198,743
4,146,721	4,181,504	4,190,013	4,199,373
4,153,572	4,181,747	4,190,175	4,199,487
4,155,347	4,181,800	4,190,290	4,199,578
4,155,708	4,181,850	4,190,316	4,199,661
4,156,931	4,182,628	4,190,550	4,199,695
4,157,929	4,183,672	4,190,760	4,199,800
4,158,231	4,183,742	4,190,786	4,199,918
4,159,286	4,183,790	4,191,074	4,200,037
4,162,261	4,183,811	4,191,462	4,200,205
4,162,298	4,183,900	4,191,560	4,200,212
4,163,652	4,183,901	4,191,945	4,200,231
4,164,501	4,184,230	4,192,346	4,200,266
4,167,609	4,185,319	4,192,879	4,200,455
4,168,755	4,185,643	4,193,233	4,200,517
4,171,445	4,186,199	4,193,301	4,200,695
4,172,569	4,186,397	4,193,350	4,200,760
4,173,673	4,187,016	4,193,818	4,201,259
4,174,216	4,187,107	4,194,051	4,201,481
4,174,940	4,187,204	4,194,099	4,201,724

Disclaimers

4,059,504.—*William V. Bauer,* New York, N.Y. HYDROTREATING OF PYROLYSIS GASOLINE. Patent dated Nov. 22, 1977. Disclaimer filed May 12, 1980, by the assignee, *The Lummus Company.*

Hereby enters this disclaimer to the remaining term of said patent.

3,960,315.—*Thomas Edward Dobbins,* Neenah, Wis. CARTON WITH INSPECTION FLAP AND BLANK THEREFOR. Patent dated June 1, 1976. Disclaimer filed May 19, 1980, by the assignee, *American Can Company.*

Hereby enters this disclaimer to claims 1, 2, 5, 6, 7, 10 and 11 of said patent.

3,172,956.—*Hiroshi Inose,* Tokyo, Japan and *John P. Runyon,* Mendham, N.J. TIME DIVISION SWITCHING SYSTEM FOR TELEPHONE SYSTEM UTILIZING TIME-SLOT INTERCHANGE. Patent dated Mar. 9, 1965. Disclaimer filed May 5, 1980, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks: Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,288 to 2,301, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1980

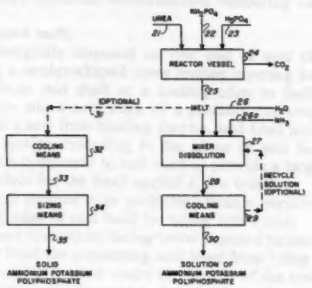
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T996,001
PRODUCTION OF AMMONIUM POTASSIUM POLYPHOSPHATES

Richard C. Sheridan, Sheffield; John F. McCullough, Florence, and Leland L. Frederick, Florence, all of Ala., assignors to Tennessee Valley Authority, Washington, D.C.

Filed Sep. 17, 1979, Ser. No. 76,007
Int. Cl.³ C05B *7/00*
U.S. Cl. 71—36
2 Sheets Drawing. 17 Pages Specification



Embodiment No. 1. Urea phosphate prepared from wet-process phosphoric acid is heated with monopotassium orthophosphate in a mole ratio of 0.25 to 4.0 at 130° to 200° C. to form an ammonium potassium polyphosphate having an average chain length between 1.2 and 2.5. The ammonium potassium polyphosphate is dissolved in aqueous ammonia to yield concentrated fertilizer solutions containing the three major nutrients and over 50 percent total plant food.

Embodiment No. 2. Phosphoric acid containing 54 to 76 percent P_2O_5 is heated with urea (urea:H_3PO_4 mole ratio 0.5 to 2.0) and monopotassium orthophosphate (urea:KH_2PO_4 mole ratio 0.25 to 4.0) at 130° to 200° C. to form an ammonium potassium polyphosphate having an average chain length between 1.2 and 2.5. The ammonium potassium polyphosphate is dissolved in aqueous ammonia to yield concentrated fertilizer solutions containing the three major nutrients and over 50 percent total plant food.

T996,002
RECORDING MATERIALS

John C. Kwok, Sarnia, Canada, assignor to Bexford Limited, London, England

Filed Oct. 23, 1979, Ser. No. 87,566
Claims priority, application United Kingdom, Jun. 26, 1978, 27843/78
Int. Cl.³ G03C *1/54, 5/00, 1/78*
U.S. Cl. 430—152
No Drawing. 28 Pages Specification

Vesicular recording materials are described which include a sensitized layer comprising a polyeric vehicle for the sensitizing agent which is an acrylonitrile/substituted or unsubstituted styrene copolymer with at least 55 mole % of acrylonitrile and preferably less than 85 mole %. The copolymer is usually homogeneous and preferably derived from acrylonitrile and the styrene comonomer along and most preferably contains from 65 to 82 mole % of acrylonitrile. The copolymer is softenable on heating to permit the gas released by the sensitizing agent in the light struck areas to form light-scattering or reflecting vesicles therein.

A surfactant in an amount of at least 1% by weight, based on the weight of the copolymer, essential to vesiculation and anionic surfactants are especially effective in providing a wide tonal range and good speed rating, amounts up to 20% by weight being preferred. Generally, amounts of the surfactant in the range 2 to 5% by weight provide a satisfactory combination of vasiculating properties. The sensitized layer is preferably applied as a coating to a carrier sheet support such as a polyethylene terephthalate film. These recording materials have excellent vesiculating properties, particularly tonal range and speed rating.

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1980

REISSUES

JULY 1, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

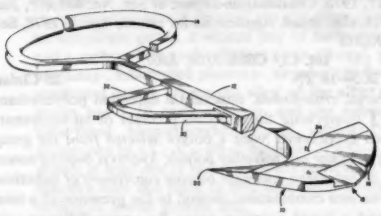
Re. 30,316
LUMBERING TOOL

Victor A. Dushku, Rackarbergsgatan 34, 2 TR., 752 32 Uppsala, Sweden

Original No. 3,945,065, dated Mar. 23, 1976, Ser. No. 591,412, Jun. 30, 1975. Application for reissue Mar. 16, 1978, Ser. No. 887,465

Int. Cl.[2] B25F *1/00*; B66F *15/00*

U.S. Cl. 7—161 24 Claims



1. A unitary portable, multi-function lumbering tool comprising:

an elongated shaft;

a head integrally disposed on one end of said shaft and having a wedge-shaped cross section tapering longitudinally from said shaft to a leading edge to facilitate its insertion into a saw track of a partially cut tree and to prevent a saw from binding therein, said head including a flared section extending in the plane of said head in a direction transverse to said shaft to provide a larger bearing surface for the head against a tree trunk;

at least one pointed edge projecting from a portion of said leading edge of said head for biting into a tree;

one or more rearwardly facing barbs disposed on one surface of said head for preventing said head from being pressed out of said saw track under the weight of the tree;

a handle integrally disposed at the other end of and cooperative with said shaft to provide a lever for tipping the tree about a fulcrum provided by the thicker end of said head; and

a hook disposed with respect to said head and cooperative with a surface of said tool to provide canting functions.

Re. 30,317
METHOD AND APPARATUS FOR DETERMINING THE PERFUSION EFFICIENCY FACTOR OF ANIMAL TISSUE

Dietrich W. Lübbers, Dortmund, and Albert Hüch, Marbach, both of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

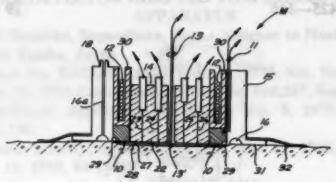
Original No. 3,918,434, dated Nov. 11, 1975, Ser. No. 415,803, Nov. 14, 1973. Application for reissue Nov. 11, 1977, Ser. No. 850,770

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1972, 2255879

Int. Cl.[2] A61B *5/02, 6/00*

U.S. Cl. 128—635 17 Claims

1. A method of determining the perfusion efficiency factor of animal tissue having blood vessels containing indicator substances therein, comprising the first step of percutaneously measuring the perfusion rate in animal tissue at a specific locus, said first step including heating a first member adapted to be placed against the tissue to be measured, measuring a first temperature of said first member, measuring a second temperature of a second member located centrally of said first member, comparing said first and second temperatures and forming a first differential signal which is proportional to the perfusion rate of the tissue; the second step of simultaneously percutaneously measuring the concentration of the indicator substances in the blood vessels in the tissue at the same locus and generating a second signal which is proportional to the concentration of the indicator substances in the blood vessels; and the third step of processing said first and second signals for generating a third signal which is indicative of the perfusion efficiency factor.



Re. 30,318
METHOD OF AND APPARATUS FOR PREPARING A WEFT SUPPLY IN A MAGAZINE FOR WEFT INSERTION IN SHUTTLELESS LOOMS

Ladislav Klinecky, and Stanislav Krmela, both of Sumperk, Czechoslovakia, assignors to Zbrojovak Vsetin, narodni podnik, Vsetin and Vyzkumny ustav lykovych vlaken, Sumperk, both of, Czechoslovakia

Original No. 3,799,211, dated Mar. 26, 1974, Ser. No. 278,630, Aug. 7, 1972. Application for reissue Mar. 23, 1976, Ser. No. 669,724

Claims priority, application Czechoslovakia, Aug. 5, 1971, 5692-71

Int. Cl.[2] D03D *47/36*

U.S. Cl. 139—452 25 Claims

25. In a method of preparing a length of weft yarn in a magazine for weft insertion in a shuttleless loom, the step of creating a helical air flow in said magazine which causes an intermittent prolongation of the path of the weft yarn in the shape of a helix as it passes through said magazine, and the step of ejecting the weft yarn from the magazine in a substantially axial direction relative to said helical air flow.

Re. 30,319

TABLETTING MACHINES

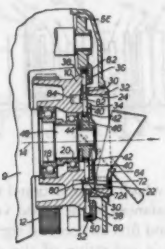
Jack Crossley, and David H. Wilson, both of Liverpool, England, assignors to Manesty Machines, Ltd., Liverpool, England

Original No. 3,918,873, dated Nov. 11, 1975, Ser. No. 523,143, Nov. 12, 1974. Application for reissue Nov. 13, 1978, Ser. No. 960,299

Claims priority, application United Kingdom, Nov. 17, 1973, 53494/73

Int. Cl.[2] B30B *11/08*

U.S. Cl. 425—345 19 Claims



1. In a tabletting machine in which the powdered or granulated material to be tabletted is fed from a feed frame onto the surface of a rotating die table so as to fill dies in the die table and be compressed into a tablet in each die, between a pair of punches individual to the die, and which enter the die from opposite ends, one of the punches being subsequently withdrawn from the die and the other punch being pushed through the die to eject the tablet from the die, [the improvement wherein:] *and in which*

[a.] the punches are arranged for movement relative to the die table, radially with respect to the axis of the die table, *the improvement comprising:*

[b.] a flexible hoop [is provided] which rotates with the die table and which is constrained and guided by abutments so as to assume a non-circular shape, and

[c.] means [is provided] *coupled to said punches* for moving corresponding ones of each pair of punches under the control of radial deflections of said flexible hoop,

one at least of said abutments being adjustable radially with respect to the axis of rotation of the die table thereby to adjust the movement of said corresponding ones of said punches.

Re. 30,320

CORONA REACTION METHOD AND APPARATUS

Frank E. Lowther, Severna Park, Md., assignor to Union Carbide Corporation, New York, N.Y.

Original No. 4,016,060, dated Apr. 5, 1977, Ser. No. 558,046, Mar. 13, 1975. Application for reissue Apr. 4, 1979, Ser. No. 27,060

Int. Cl.[2] C01B *13/11*

U.S. Cl. 204—176 18 Claims

1. A process for conducting corona discharge reactions between spaced electrodes comprising the steps of:

a. passing a reactant gas through a corona discharge gap formed between said spaced electrodes;

b. periodically establishing a corona discharge by dissipating narrow pulse electrical power of high voltage in said gap with the width of each narrow pulse being a relatively small fraction of the pulse period as well as being less than *substantially about* the gas ion transit time across said gap and greater than the electron transit time; and

c. maintaining a low voltage bias potential across said gap during the interval between said narrow pulses of a predetermined minimum magnitude sufficient to remove a substantial number of gas ions from said gap [being] *before* the termination of each pulse period.

Re. 30,321

MINERAL OIL EXTENDED POLYURETHANE SYSTEM CONTAINING A COUPLING AGENT FOR DECONTAMINATING AND SEALING THE INTERIOR SPACES OF AN INSULATED ELECTRICAL DEVICE

Melvin Brauer, East Brunswick, and Thaddeus F. Kroplinski, Bound Brook, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Original No. 4,008,197, dated Feb. 15, 1977, Ser. No. 632,180, Nov. 17, 1975. Continuation-in-part of Ser. No. 432,479, Jan. 11, 1974, abandoned. Application for reissue Apr. 3, 1978, Ser. No. 893,315

Int. Cl.[2] C08K *5/01, 5/07, 5/10*

U.S. Cl. 260—18 TN 25 Claims

1. A *cured, cross-linked,* mineral oil extended polyurethane [system] comprising the reaction product of an isocyanate terminated prepolymer with a polyol *selected from the group consisting of castor oil, polyether polyols, hydroxyl bearing homopolymers of butadiene, hydroxyl bearing copolymers of butadiene and styrene, and combinations thereof,* in the presence of a mineral *oil* and a liquid coupling agent for compatibilizing said mineral oil with said polyurethane, said *mineral oil extended* polyurethane [system] containing from about 8 to about 20 parts of [said urethane polymer] *polyurethane,* from about 60 to about 75 parts mineral oil and from about 10 to about 25 parts of [coupler] *coupling agent,* all parts expressed on a weight basis, said liquid coupling agent being miscible in all proportions with said mineral oil, said coupling agent *being* selected from the group consisting of a ketone and an ester [of an organic compound selected from the group consisting of a diol and a diacid], said agent having a boiling temperature above 220° F., a solubility parameter between 7.0 and 9.5 and a hydrogen bonding index number in the range from [8.2 to 8.8] *6.0 to 12.0, and said agent being non-reactive with the prepolymer and the polyol,* said isocyanate terminated prepolymer *being prepared by reacting a polyisocyanate* selected from the group consisting of cycloaliphatic diisocyanate, aliphatic diisocyanate and aromatic diisocyanate [; said] *with a* polyol selected from the group consisting of castor oil, [and] polyether *polyols, hydroxyl bearing homopolymers of butadiene, hydroxy bearing copolymers of butadiene and styrene, and combinations thereof* wherein at least [one of said urethane forming reactants include a hydroxy bearing polybutadiene constituent] *a portion of the polyol used in the preparation of the polyurethane is selected from the group consisting of hydroxyl bearing homopolymers of butadiene and hydroxyl bearing copolymers of butadiene and styrene,* the mineral oil extended polyurethane when cured retaining the mineral oil within its structure, thereby preventing the oil from spewing and exuding from said cured composition[, said composition possessing a gel-like consistency].

23. A cured, cross-linked, mineral oil extended polyurethane which is non-spewing comprising from about 8 to about 45 parts of polyurethane, from about 25 to about 75 parts of mineral oil and from about 10 to about 35 parts of coupling agent, all parts expressed on a weight basis, wherein the cured, cross-linked polyurethane is characterized by the presence of a polybutadiene moiety in the polyurethane structure and is prepared from a mineral oil extended polyurethane precursor in admixture with the coupling agent, said coupling agent being characterized by:

(a) possessing a solubility parameter between 7.0 and 9.5;

(b) having a hydrogen bonding index number in the range of 6.0 to 12.0;

(c) being miscible in all proportions with said mineral oil; and

(d) being non-reactive with said polyurethane precursor.

Re. 30,322

NOVEL ELASTOMERIC GRAFT COPOLYMERS

Clarence F. Hammer, Wilmington, Del., and Harold K. Sinclair, Louisville, Ky., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,017,557, dated Apr. 12, 1977, Ser. No. 523,465, Nov. 13, 1974. Application for reissue Dec. 15, 1978, Ser. No. 969,935

The portion of the term of this patent subsequent to Aug. 3, 1993, has been disclaimed.

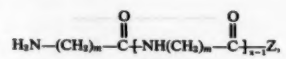
Int. Cl.[2] C08L 77/00

U.S. Cl. 525—183 15 Claims

1. An elastomeric, thermoplastic graft copolymer consisting essentially of

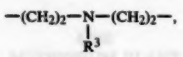
A. an elastomeric trunk copolymer derived from at least two monomers, at least one of said monomers providing amine-reactive sites selected from the class consisting of an anhydride group, a vicinal pair of carboxylic groups, and a carboxylic group adjacent to an alkoxy-, phenoxy-, napthoxy-, substituted phenoxy-, or substituted naphthoxycarbonyl group, where the alkyl of the alkoxycarbonyl group has 1–10 carbon atoms, and the substituents of substituted phenoxycarbonyl and naphthoxycarbonyl groups can be a C_1–C_{10} alkyl, halogen, or a C_1–C_{10} alkoxy group; at least one of said monomers containing no amine-reactive sites and none of said monomers containing hydroxyl or amino groups; and

B. a side chain polymer derived from a short chain polyamide represented by the formula



where Z is

R^1 and R^2 being independently selected from hydrogen, a C_1–C_{18} alkyl, benzyl, and C_5–C_6 cycloalkyl; or taken together, being $-(CH_2)_4-$, $-(CH_2)_5-$, $-(CH_2)_2-O-(CH_2)_2-$, or



where R^3 is a C_1–C_6 alkyl; with the proviso that only one of R^1 or R^2 can be hydrogen;

m is 5 and 11; and

x is a positive number having an average value of 5–60;

said side chain polymer being attached to said trunk copolymer through amide or imide linkages resulting from a reaction of the terminal primary amino group of said short chain polyamide with the amine-reactive sites of said trunk copolymer; the proportion of said elastomeric trunk copolymer in the graft copolymer being about 45–85 weight percent.

Re. 30,323

SMOKE DETECTOR ADAPTED TO A SMOKE SENSING APPARATUS

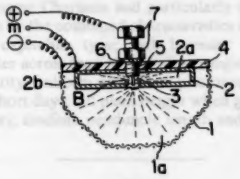
Yukio Tomioka, Sagamihara, Japan, assignor to Hochiki Kabushiki Kaisha, Japan

Original No. 3,935,466, dated Jan. 27, 1976, Ser. No. 440,521, Jun. 18, 1971. Continuation of Ser. No. 860,357, Sep. 23, 1969, abandoned. Application for reissue Sep. 5, 1978, Ser. No. 940,156

Claims priority, application Japan, Sep. 26, 1968, 43-69696; Mar. 11, 1969, 44-18458

Int. Cl.[2] G01T 1/18

U.S. Cl. 250—385 6 Claims



1. An ionization-type smoke detector *having only a single radioactive source,* comprising: an inner electrode provided with [a] *said single* radioactive source; an intermediate electrode having at least one throughhole; and an outer electrode having openings through which smoke can enter; *an insulating support member supporting said inner electrode, said intermediate electrode and said outer electrode; and an annular wall means projecting from said support member at a position inwardly of the outer circumference of said support member;* said inner electrode and said intermediate electrode forming an inner ionization chamber in which said radiation source is arranged, said intermediate electrode and said outer electrode forming an outer ionization chamber, said inner ionization chamber being [arranged inside] *located in a topmost portion of* said outer ionization chamber *which surrounds the inner ionization chamber, said intermediate electrode being secured to said annular wall means such that the surfaces thereof define said inner ionization chamber,* and wherein a necessary quantity of radioactive rays emitted from said radioactive source is introduced directly into said outer ionization chamber through said holes.

PLANT PATENTS

GRANTED JULY 1, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,558

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Continuation of Ser. No. 845,240, Oct. 25, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,816
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—17 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a distinctly orangey-pink coloring of mature blooms which change to reddish orange as the blooms age, a white overlay appearing as the blooms age, a shorter fuller bud than the present "First Prize", the flowers being larger and more formal with medium length, strong stems, relatively few thorns and heavy, waxy foliage.

4,559

RED ROSE SEEDLING NAMED HILTACO

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed Feb. 28, 1979, Ser. No. 24,581
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—28 1 Claim

1. A new and distinct rose plant cultivar, substantially as herein shown and described, characterized by its abundant and continuous production of lustrous red flowers, its very free growth habit with good winter productivity, and its resistance to mildew and the occurrence of blind wood.

4,560

MYOPORUM PLANT

George C. Smith, 436 Greenwood, Arroyo Grande, Calif. 93420

Filed Mar. 15, 1979, Ser. No. 20,878
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of Myoporum plant discovered in a cultivated area, substantially as shown and described, characterized particularly by a distinctive woody plant prostrate in form attaining a height of 12 to 18-inches and a spread of 12 to 15-feet, leaves ¼ to ¾-inches wide and 2 to 3-inches long and dense growing ability making it especially useful for erosion and traffic control and of tolerance for pruning and shaping in any season.

4,561

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,853
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Charisma and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; daisy capitulum type; dark lavender pink ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform nine week photoperiodic flowering response to short days; tall plant height when grown as a single stem cut spray; medium penduncle length and minimal pollen production.

4,562

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,851
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—76 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Capri and particularly characterized as to uniqueness by the combined characteristics of semi-incurved capitulum form; decorative capitulum type; dark lavender pink ray floret color, with minimal color oxidation; diameter across face of capitulum ranging from 100 to 120 mm. at maturity; uniform nine week flowering response; medium plant height, and semi-spreading branching pattern.

4,563

YELLOW CHRYSANTHEMUM NAMED MEDALIST

Leonard H. Shoesmith, Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,407
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct chrysanthemum cultivar, substantially as herein shown and described, characterized by its bright yellow composite flowers which have green florets at the center of the disc, by its compact plant habit, and by its freedom from heat delay.

PATENTS

GRANTED JUL. 1, 1980

ERRATA

For CLASS	See PATENT NO.
433–177	4,209,904
433–189	4,209,905
433–011	4,209,906
433–033	4,209,907
433–078	4,209,908
433–057	4,209,909
368–273	4,209,968
368–250	4,209,969
368–076	4,209,970
368–076	4,209,971
366–071	4,209,972
368–084	4,209,973
368–084	4,209,974
368–186	4,209,975
368–187	4,209,976
368–010	4,209,977
430–126	4,210,448
430–183	4,210,449
430–567	4,210,450
525–006	4,210,556
525–088	4,210,579
548–251	4,210,587
556–436	4,210,596
568–385	4,210,606
568–385	4,210,607
568–451	4,210,608
568–947	4,210,609
525–204	4,210,612
427–088	4,210,689
375–120	4,210,776
375–117	4,210,777
370–080	4,210,780
455–610	4,210,803
455–095	4,210,870
455–137	4,210,871
367–106	4,210,897
363–124	4,210,958

PATENTS

GRANTED JUL. 1, 1980

ERRATA

PATENTS

GRANTED JULY 1, 1980

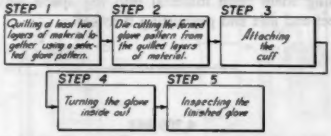
GENERAL AND MECHANICAL

4,209,857

PROCESS FOR MANUFACTURING WORK GLOVES

L. Jack Clark, Jr., 2110 Hollywood Rd., Atlanta, Ga. 30318, and David L. Clark, 174 Confederate St., Dallas, Ga. 30132

Filed Mar. 5, 1979, Ser. No. 17,361
Int. Cl.[2] A41D *19/02*
U.S. Cl. 2—169 8 Claims


STEP 1
Quilting at least two layers of material together using a selected glove pattern.
STEP 2
Die cutting the formed glove pattern from the quilted layers of material.
STEP 3
Attaching the cuff
STEP 4
Turning the glove inside out
STEP 5
Inspecting the finished glove

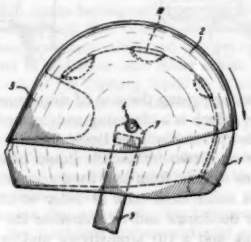
1. In a method of manufacturing gloves, the steps of quilting superposed layers of material together with lines of stitching forming the outlines of multiple glove bodies connected integrally with said material, and die cutting the quilted material on cutting lines slightly outside of said lines of stitching and following the lines of stitching to separate pre-sewn glove bodies from said quilted material.

4,209,858

SAFETY HELMET

Michel J. Coenen, Rijswijk, Netherlands, assignor to Coenen Benelux B. V., The Hague, Netherlands

Filed Feb. 2, 1978, Ser. No. 874,676
Claims priority, application Netherlands, Apr. 25, 1977, 770517
Int. Cl.[2] A42B *3/02;* A61F *9/06*
U.S. Cl. 2—412 4 Claims



1. A motorcyclist's crash helmet comprising an inner shell of shock-absorbing material, a protective outer shell made of a hard plastic material, said outer shell fittingly surrounding the greater part of the inner shell in the lowered position and having a visor portion wherein said outer shell and said visor are formed of a single piece of transparent plastic, said outer shell being connected to said inner shell by at least one hinge transverse to the side portion of the helmet.

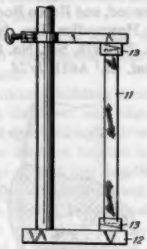
4,209,859

LIGAMENT AND TENDON PROSTHESIS OF POLYETHYLENE TEREPHTHALATE AND METHOD OF PREPARING SAME

Harmon L. Hoffman, Wyckoff, N.J., assignor to Meadox Medicals, Inc., Oakland, N.J.

Filed Mar. 29, 1978, Ser. No. 891,433
Int. Cl.[2] A61F *1/24, 1/00*
U.S. Cl. 3—1 17 Claims

13. A prosthesis suitable for repair of a damaged ligament or tendon, comprising a polyethylene terephthalate fabric strip of reduced extensibility in the longitudinal direction, the term "fabric " being taken to include woven, circularly-knit and warp-knit goods, the extensibility of said ligament or tendon



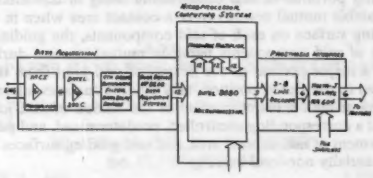
being characteristic of a strip which has been treated with a shrinking agent under conditions such as to reduce the extensibility thereof by at least about 50%.

4,209,860

SYSTEM AND METHOD FOR MULTIFUNCTIONAL CONTROL OF UPPER LIMB PROSTHESIS VIA EMG SIGNAL IDENTIFICATION

Daniel Graupe, Fort Collins, Colo., assignor to The United States of America as represented by the Administrator of Veterans' Affairs, Washington, D.C.

Filed Feb. 13, 1978, Ser. No. 877,379
Int. Cl.[2] A61F *1/00, 1/06*
U.S. Cl. 3—1.1 13 Claims



13. In a system for controlling the operation of an electrically powered prosthetic appliance that replaces an amputee's missing limb, which system has been precalibrated by calibration steps of picking up electomyographic (EMG) signals from the stump of or from at least one muscle close to point of amputation of the missing limb, processing the signals thus collected so as to reduce same to a near minimum number of linear time series model parameters effective to differentiate between each of the several functions performed by the missing limb from each other function thereof, and collecting historical data representative of each of the functions of the prosthesis appliance to be controlled for use as background data, the improvement comprising means for storing the parameters and the background data of each of the functions to be performed by the prosthetic appliance on the person of the amputee; means for collecting current EMG signals from the stump of the amputee or from at least one muscle close to the point of amputation; a plurality of networks having a common input coupled to receive the collected current EMG signals, each said network having been adjusted by the stored time series parameters relating to respective different limb functions as obtained during calibration; comparing means for comparing the current EMG signals collected with respective outputs

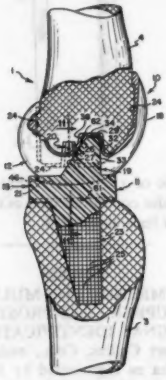
of said networks; and means responsive to output from said comparing means for initiating a response in the prosthetic appliance corresponding to that network whose output over a predetermined time interval is closest to the collected EMG signals over the same interval.

4,209,861

JOINT PROSTHESIS

Peter S. Walker, Ridgewood, and Rocco Borzone, Emerson, both of N.J., assignors to Howmedica, Inc., New York, N.Y.

Filed Feb. 22, 1978, Ser. No. 880,057
Int. Cl.² A61F 1/24
U.S. Cl. 3—1.911 **17 Claims**



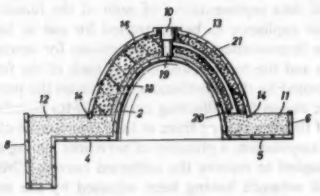
1. A joint prosthesis articulatable between extended and flexed positions comprising a first component, a second component, a bearing portion in each of said components, the bearing portions of said components being in non-linked articulatable mutual contact over a contact area when in use, a guiding surface on each of said components, the guiding surfaces of said components being in mutual contact during at least a major portion of the flexion of said joint from the extended to the flexed position, said guiding surfaces interacting during at least a major portion of the flexion of said joint to effect a corresponding controlled, predetermined, and positive movement of said contact area, and said guiding surfaces being substantially non-load bearing.

4,209,862

BATHROOM FIXTURES AND PROCESS OF MANUFACTURE

Rodrigo Cortes-Garza, Avenue Madero 2473 Ote., Monterrey, Nuevo Leon, Mexico

Continuation-in-part of Ser. No. 913,676, Jun. 8, 1978, abandoned. This application Mar. 22, 1979, Ser. No. 22,941
Claims priority, application Mexico, May 11, 1978, 173456
Int. Cl.² E03C 1/18; B29D 27/04
U.S. Cl. 4—187 R **9 Claims**



1. A composite stock material comprising a first layer of marble, a second layer of polyurethane foam, and a third reinforcing layer of fiberglass reinforced resin having a portion thereof embedded in said marble and a portion overlying and in contact with said foam.

6. A method of manufacturing a bathroom fixture and the like comprising:

forming over a male mold a basin of a thin layer of a marble mix having thick peripheral areas of the marble mix,

embedding prior to curing the mix a rigid reinforcing sheet in the thick areas of the mix with a portion of the sheet spaced from the thin marble mix layer, and

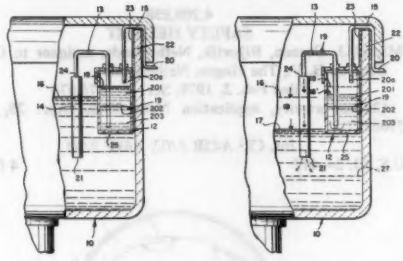
injecting foam resin material into the space between the sheet and mix and permitting it to set.

4,209,863

PROCESS FOR AROMATIZING AND/OR DEODORIZING THE ENVIRONMENT SURROUNDING THE FLUSH TANK OF A TOILET

Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application Apr. 30, 1979, Ser. No. 34,503
Int. Cl.² E03D 9/02
U.S. Cl. 4—228 **14 Claims**



1. A process comprising the step of simultaneously causing (i) a first liquid which is a cleansing and/or sanitizing and/or deodorizing and/or aromatizing liquid initially retained in a separate phase of a two immiscible liquid phase containing container means to flow from said fixed container means into the water of a toilet flush tank in order to cleanse and/or sanitize and/or deodorize and/or aromatize the water of said toilet flush tank and a (ii) aromatizing and/or deodorizing emission of fixed duration evolving from said fixed container means to aromatize and/or deodorize the air in the vicinity of the toilet flush tank by using:

(i) the lowering level of water in the said toilet flush tank during the first phase of flushing in order to cause in order to cause said first liquid which is a cleansing and/or sanitizing and/or deodorizing and/or aromatizing liquid to be emitted from said fixed container means into said water; and

(ii) the rising level of water in the said toilet flush tank during said second phase of flushing to cause aromatizing and/or deodorizing vapor to diffuse from a second aromatizing and/or deodorizing liquid initially retained in a separate phase of a two immiscible liquid phase containing container means separate from said first liquid, into air bubbles produced within said container means as a result of said rising level of water, said air bubbles rising to the upper surface of the upper phase of the aromatizing and-/or deodorizing liquid in said container means, the air contained within the air bubbles then being conveyed into the atmosphere proximately surrounding said flush tank.

4,209,864

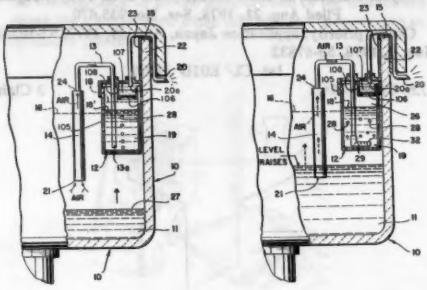
CLEANSER AND/OR SANITIZER AND AROMA EMITTING ATTACHMENT FOR TOILETS AND PROCESS FOR USING SAME

Jerome Lindauer, Hillsdale, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 958,492, Nov. 7, 1978, Pat. No. 4,168,550. This application May 21, 1979, Ser. No. 40,920

Int. Cl.[2] E03D 9/02

U.S. Cl. 4—228 **16 Claims**



1. In an apparatus located within the flush tank of a toilet for dispensing a measured amount of odorant or deodorant vapor into the atmosphere surrounding the toilet and for dispensing a measured amount of one or more solutions selected from the group consisting of a cleanser solution, a sanitizer solution, an aromatizer solution and a deodorizer solution into the liquid stored in the flush tank, said flush tank being of the type which retains a flushing liquid which lowers and rises between a first upper level and a second lower level during flushing, and including:

(i) container means for retaining the additive liquids in solution;

(ii) first conduit means having outlet opening means and inlet opening means, said first conduit means communicating between said container means and an inlet opening means positionable in said flush tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, said inlet opening means being positionable sufficiently below said first level for the flushing liquid to force air through the first conduit means into the container means as the flushing liquid level rises above the inlet opening means towards said first level; said first conduit means also communicating between said additive liquid in the container means and said outlet opening means positionable in said tank for passage of additive liquid into the flushing liquid whereby the level of said outlet opening means is substantially below the bottom level of said solution in said dispensing apparatus, the improvement comprising, in combination:

a. Said first conduit means which communicates between said container means and said inlet opening means consisting essentially of a first tube having a first inside diameter and a second tube having a second inside diameter, said first tube being positioned from a point in proximity to the bottom of said container means and passing through the top of said container means above the level of said additive liquid solution and then in a downward direction to a point which is at substantially a level identical to the level of the bottom of said container means which retains said additive liquid solution, the end of said first tube having said first inside diameter being said outlet opening means for said conduit means for passage of additive liquid into the flushing liquid, said outlet of said first tube being fixedly connected in a sealed manner to said second tube having said second inside diameter, said second tube having said second inside diameter passing from said outlet means of said first tube to said inlet opening means positionable in said tank intermediate said first and second levels of the flushing liquid to admit air into the first conduit means when the flushing liquid lowers below the inlet opening means, and

b. a second conduit means communicating from a level above the highest level of the additive liquid solution retained in said container means into the air surrounding said flush tank; and

c. the ratio of said second inside diameter to said first inside diameter being in the range of from about 2:1 up to about 5:1; and

d. a fixedly positioned holding means having a substantially resilient structure and capable of supporting a solid or gelled deodorizing and/or aromatizing composition of matter thereon, located in between (i) said inlet opening means of said first conduit means and (ii) said second conduit; whereby during the flushing, during the first cycle thereof, when the flushing liquid lowers from the first upper level to the second lower level, additive liquid is siphoned from said container means into said flushing liquid and during the second phase of the flushing cycle, when the flushing liquid rises from said second lower level to said first upper level, air forced into said second tube of said first conduit means is transmitted through said first tube of said first conduit means and into said container means in the form of air bubbles which travel to the upper level of said additive liquid solution held within said container means and whereby aromatizing or deodorizing substance contained in said additive liquid solution is diffused into said travelling air bubbles so that when the air bubbles reach the upper surface of said additive liquid solution held in said container means the gaseous phase is a mixture of air and aromatizing or deodorizing substance and the mixture of air and aromatizing or deodorizing substance then travels through said second conduit means into the atmosphere surrounding said flush tank.

4,209,865

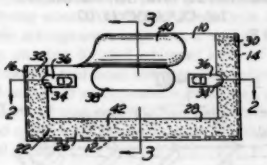
WALLPAPER HAND TOOL WITH INTERCHANGEABLE BLADES

Robert L. Kozlowski, 4981 Burnley, Bloomfield Hills, Mich. 48013

Filed May 4, 1978, Ser. No. 902,792

Int. Cl.[2] E04F 21/28

U.S. Cl. 7—105 **7 Claims**

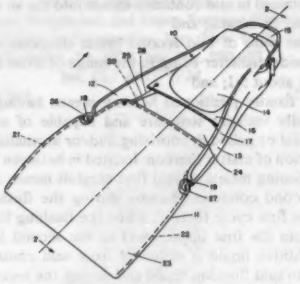


1. A hand tool consisting of a holder plate and a plurality of interchangeable removable working edge frames, said holder plate comprising a handle and a peripheral portion provided with at least one straight edge and each of said working edge frames comprising a channel member removably fitted over said straight edge of said holder plate, and said holder plate and each of said working edge frames having co-operating complementary means for removably holding and locking one of said working edge frames on said holder plate peripheral portion wherein each of said working edge frames comprises three integral channel members for mounting over three peripheral consecutive edges of said holder plate as a unit.

4,209,866
SWIM FIN

Herbert H. Loeffler, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Oct. 2, 1978, Ser. No. 947,459
Int. Cl.[2] A63B *31/10*
U.S. Cl. 9—304 6 Claims

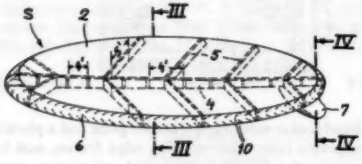


1. A swim fin, comprising in combination
(a) a foot section adapted to receive a swimmer's foot and having a toe portion defining a trailing edge and a heel portion;
(b) oppositely disposed rigid pivot support members affixed to and extending aft of said trailing edge of said toe portion;
(c) a blade comprising a rigid frame defining a leading edge and opposite side edges and a flexible membrane having a small streamlining reversible camber mounted on said frame, said blade being pivotally mounted between said pivot support members along a pivot line essentially parallel to said leading edge of said blade and being located a distance equivalent to between about 20% and about 30% of the length of said blade aft of said leading edge of said blade and positioned to define an open passage extending across the distance between said pivot support members and between said leading edge of said blade and said trailing edge of said toe section; and
(d) pivot limiting means arranged to limit the angle of blade pivot in either direction to no greater than about 30°.

4,209,867
FLEXIBLE SURFBOARD

Henry H. Abrams, III, 15 Community Rd., Bay Shore, N.Y. 11706

Filed Mar. 20, 1978, Ser. No. 888,492
Int. Cl.[2] A63C *15/00*
U.S. Cl. 9—310 E 6 Claims

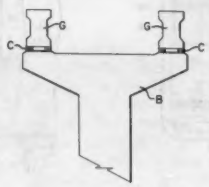


1. A surfboard comprising:
an elongated substantially oval deck structure having upper and lower broad surfaces and composed at least in part of balsa wood having the grain perpendicular to said broad surfaces and enclosed in a hardened layer of fiberglass-containing synthetic resin; and
a generally flat stabilizer extending downwardly from said lower broad surface at one end of said deck structure and secured thereto, said stabilizer comprising two mirror symmetrical halves formed from sheet balsa having the grain perpendicular to a broad surface of each of said halves and parallel to said lower broad surface, said halves being joined at the broad surfaces thereof by a coating of synthetic resin laminated therebetween.

4,209,868
FIXED SUPPORT STRUCTURE

Hiroshi Tada, Yokohama, and Toshiro Nozu, Tokyo, both of Japan, assignors to Oiles Industry Co. Ltd., Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,670
Claims priority, application Japan, Aug. 29, 1977, 52-103438; Jun. 7, 1978, 53-67832
Int. Cl.[2] E01D *19/06*
U.S. Cl. 14—16.1 3 Claims



3. In a fixed support structure made up of a pair of support units (101), each unit including a retainer (129), a housing (103) and a ball stud, said ball stud having a ball portion (108) disposed in said housing (103) and a threaded shank portion (109), said shank portion (109) extending downward from said housing (103), said housing (103) being fixed to an upper structure such as a bridge girder (G) in spaced relation, and said shank portion (109) being threadedly fixed to said retainer (129), said retainer (129) including a base plate (124) which in turn is fixed to a lower structure (B) such as a bridge base, in combination:
(a) an aperture (130) at the center of said retainer (129) a pin (125) extending upward of the center of said base plate (124), through said aperture, a first eccentric disc (127) rotatably disposed around said pin (125) in sliding contact therewith, a second eccentric disc (128) rotatably disposed around said first eccentric disc (127) in sliding contact therewith;
(b) lock bolts (121) coupling said retainer to said lower structure (B) on diagonally opposite sides of said aperture (130) disposed transverse to the longitudinal direction of the upper structure to which said support structure is fixed;
(c) an anchor plate embedded in said lower structure (B), parallel to said base plate (124), corresponding apertures in said base plate (124) and said anchor plate (120) with protective cylinders (139) extending between said base plate (124) and said anchor plate (120), said lock bolts (121) passing through said protective cylinders (139), the inner diameter of said protective cylinders (139) being larger than the outer diameter of said lock bolts (121); and,
(d) upper and lower washer means (138) disposed above said base plate (124) and below said anchor plate (120), said washer means each having spherical concave and convex surfaces facing each other.

4,209,869
LIFTING APPARATUS FOR DOCKBOARD

Ralph D. Trine; Robert L. Le Clear, both of Albion, Mich., and T & S Equipment Company, Albion, Mich.

Filed Dec. 18, 1978, Ser. No. 970,392
Int. Cl.[2] E01D *1/00*
U.S. Cl. 14—69.5 9 Claims

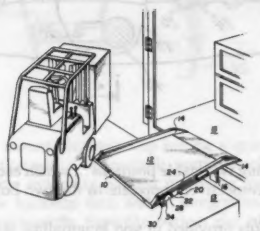
4. Apparatus for lifting one end of a dockboard or the like having side portions and adapted to be positioned on and

between a loading dock and the floor of a carrier vehicle or the like, said lifting apparatus comprising:

a lift lever pivotally mounted on one side portion of the dockboard and having an end portion,

a lifting arm movably mounted on said one side portion beneath said lift lever and having an end portion engageable with the loading dock,

said lever end portion being slidably engageable with said lifting arm to move its end portion into engagement with the loading dock to lift the adjacent end of the dockboard above the loading dock when said lift lever is moved to an operative position,



the pivotal point of said lift lever being so positioned that said lever end portion is in an over-center position relative to said pivotal point when said lift lever is in said operative position, and

stop means on said side portion for limiting movement of said lift lever in one direction to said operative position,

whereby said lift lever is maintained in said operative position by said stop means and by the weight of said dockboard owing to the overcenter position of said lever end portion.

4,209,870

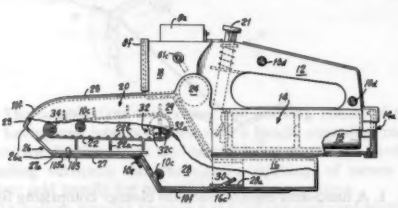
HAND-HELD CLEANING DEVICE WITH SNOUT-LIKE SWEEP TUNNEL

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Jan. 11, 1979, Ser. No. 2,786

Int. Cl.[2] A47L *11/00*

U.S. Cl. 15—97 R **22 Claims**



1. A hand-held cleaning device comprising:

a housing having,

forwardly-extending hollow tunnel means with a forwardly-inclined intake opening at its forward end for engaging a surface to be cleaned and taking in dust and debris from said surface;

handle means disposed rearwardly of said tunnel means for accommodating the hand of a user;

means defining a chamber disposed at the opposite end of said tunnel means from said intake opening for receiving dust and debris taken in through said intake opening; and

debris cup means removably disposed in communication with said chamber for collecting dust and debris received therein;

sweeping means in said tunnel means for picking up dust and debris at said intake opening and delivering it to said chamber and comprising:

an elongated endless belt extending between said ends of said tunnel means, and having a series of ribs on its inner surface and spaced flexible upstanding blade means on its outer surface for engaging dust and debris at said intake opening; and

means for mounting said endless belt in said tunnel means including gear means for engaging said ribs to drive said belt whereby said blade means moves through said tunnel means and past said intake opening;

motor means in said housing for producing a rotational output; and

drive means operatively connecting said motor means to said gear means, for rotating said gear means to drive said belt.

4,209,871

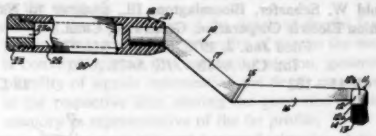
TOOTHBRUSH WITH IMPROVED INTERPROXIMAL AND FREE GINGIVAL MARGIN ACCESSIBILITY

Raymond Ernest, 170 SE. 14th St., Miami, Fla. 33131, and Jack Nestor, Miami Beach, Fla., assignors to Raymond Ernest, Miami, Fla.

Filed May 30, 1978, Ser. No. 910,870

Int. Cl.[3] A46B *9/04*

U.S. Cl. 15—167 R **5 Claims**



1. A toothbrush construction having the capability for simultaneously penetrating the interproximal spaces and under the free gingival margins of the teeth of both the maxillary and mandibular arches comprising, a stem extending from a handle, a leading end section of said stem having a longitudinal axis, said leading end section terminating in an elongated bristle bearing head having a major axis extending between opposite ends of said head and perpendicular to said longitudinal axis, said bristle bearing head comprising a back having a substantially flat surface, a plurality of bristles projecting from said flat surface in a predetermined arrangement bilaterally symmetrical with respect to a minor axis of said head, said stem longitudinal axis being coaxial with said minor axis, said predetermined bristle arrangement including a wedge-like configuration having an apex located adjacent each of said opposite ends, the length of said head between said apices being on the order of 24 mm such as to position each apex at the gingival margin of each of said arches when the mouth is in an open position and said handle disposes said stem longitudinal axis in the occlusal plane.

4,209,872

CLEANING IMPLEMENT

Siegfried Maier, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Düpro AG, Romanshorn, Switzerland

Filed Jun. 28, 1978, Ser. No. 919,941

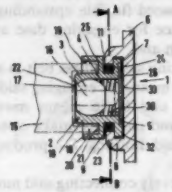
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2728992

Int. Cl.[2] A46B *15/00*; F16C *35/00*

U.S. Cl. 15—179 **22 Claims**

2. A cleaning implement which includes: a rotatable shaft provided with bristles and having each of its ends provided with a flange projecting in the axial direction of said shaft and defining a recess, said shaft having each end thereof provided

with an axle stub coaxial with said shaft and extending through the pertaining recess and projecting therefrom, bearing means each including a bearing housing having an outer surface and being at least partially nexted in the pertaining recess and journalling the respective adjacent axle stub, supporting means respectively supporting said bearing means, and shock absorbing means respectively interposed between each bearing housing and the pertaining supporting means, the outer surface of the bearing housing at each end of said shaft being provided with a first groove having at least the major portion of the respective adjacent shaft flange located therein, said bearing housing having its outer surface provided with an additional groove and a shock absorber located in said additional groove.



4,209,873

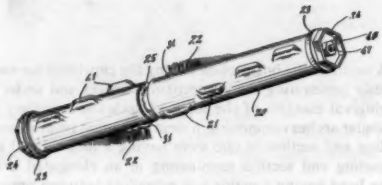
BRUSH-BEATER FOR A VACUUM CLEANER AND METHOD FOR MAKING THE SAME

Harold W. Schaefer, Bloomington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.

Filed Jun. 2, 1978, Ser. No. 911,978

Int. Cl.[2] A46B *7/10*; A47L *5/30*

U.S. Cl. 15—182 **18 Claims**



1. In a beater-brush assembly for a vacuum cleaner, wherein an elongated rotary member has spaced apart brush means and beater means; the improvement wherein said rotary member comprises an elongated hollow cylinder of substantially circular cross-section, said beater means comprising radially outwardly extending projections formed in the material of said cylinder, said cylinder having a helically extending slot with edges directed circumferentially, said brush means being held in said slot and comprising an elongated plastic base member having a pair of grooves extending longitudinally along opposite sides thereof and engaging the sides of the slot of the cylinder, and radially outwardly extending brushes having their bases embedded in said base member.

4,209,874

WINDSCREEN-WIPER BLADE

Theodore Hancu, Chene-Bougeries, Switzerland, assignor to Societe d'Exploitation de Brevets J. B., Fribourg, Switzerland

Filed Feb. 9, 1979, Ser. No. 10,779

Claims priority, application Switzerland, Feb. 17, 1978, 1755/78

Int. Cl.[2] B60S *1/40*

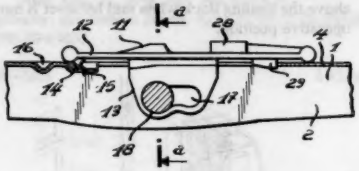
U.S. Cl. 15—250.32 **3 Claims**

1. A wiper assembly comprising:

(a) a support channel having a longitudinal wall and two lateral wings through each of which a hole passes, the two holes being aligned on an axis perpendicular to the said wings,

(b) collars extending from the wings towards each other respectively from the marginal regions of said holes,

(c) a locking piece carried by said support sliding longitudinally between the wings while remaining opposite to the two holes, said locking piece having a first transverse opening in communication with a second transverse opening of greater height, said locking piece being capable of occupying two stable positions in which each of the openings is respectively opposite to the two holes of the support,



(d) two slots provided in said longitudinal wall opposite to the collars respectively, and

(e) an intermediate piece having a pair of wings each carrying a cut-away portion of circular arc form capable of introduction into the slots respectively to bring the cut-away portions of circular arc form to press respectively upon the said collars.

4,209,875

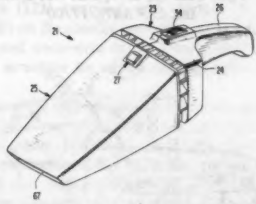
CORDLESS VACUUM CLEANER BOWL AND FILTER SYSTEM

Timothy G. Pugh, Baltimore, and Omer L. Shifflett, Jr., Lutherville, both of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Aug. 11, 1978, Ser. No. 932,762

Int. Cl.[3] A47L *5/24*

U.S. Cl. 15—344 **4 Claims**



1. A hand-held electric vacuum cleaner comprising first and second separable units interconnected by releasable latch means, said first unit including a housing enclosing a motor and fan and having switch means for operating said motor, venturi means carried by said housing and extending forwardly of said fan, said venturi means having an opening therethrough communicated with and narrowing toward said fan and operable to increase the velocity of inlet air entering said fan, said second unit including a hollow bowl having an open end receiving said venturi means, a ring removably fitted in said bowl and carrying a filter bag, means limiting the inward movement of said ring relative to said bowl, said venturi means engaging said ring and pressing it in place within said bowl, said releasable latch means including cooperable means on said venturi means and bowl and manually releasable to permit separation of said first and second units, said ring and filter bag being

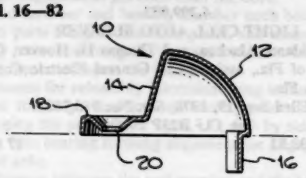
removable from said bowl upon separation of said first and second units.

4,209,876

DOOR STOP

Herbert Wilzig, 606 N. 55th St., Montebello, Calif. 90640, and Charles J. Schuessler, 1340 E. Ruddock, Covina, Calif. 91722

Filed Apr. 6, 1979, Ser. No. 27,763
Int. Cl.[2] E05F 5/02
U.S. Cl. 16—82 4 Claims



1. A floor mountable door stop having a quarter-spherical backstop portion with a substantially vertical backstop face, an integral tongue mounting portion extending away from the bottom of the backstop face, and an integral anchor member extending downwardly from the bottom end of the quarter-spherical backstop portion, wherein the improvement comprises:

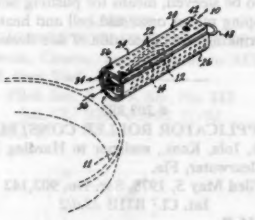
said door stop being constructed from sheet metal less than about 0.060 inches in thickness.

4,209,877

INSULATED SUPPLEMENTAL HANDLE HOUSING CAST IRON UTENSIL HANDLE

Julius R. Colasent, 123 Farland Pl., Escondido, Calif. 92025

Filed Dec. 1, 1978, Ser. No. 965,574
Int. Cl.[2] A47J 45/08
U.S. Cl. 16—116 R 8 Claims



1. The combination with a cast iron cooking utensil of the type having cast integrally therewith a handle extending radially outwardly therefrom, said handle being of the type having extending vertically therethrough an opening, of means to insulate said handle for manual handling, comprising:

(a) a hollow housing receiving at least the outboard portion of said handle and housing the same, said housing being formed of low heat transferring material,

(b) an upright key disposed in said hollow housing and secured thereto and said key being disposed in said opening and engaging the sides of said opening, said key being formed of sheet material and being planar and lying in an upright plane extending laterally of said handle and said key extending vertically from above said opening to below said opening, and

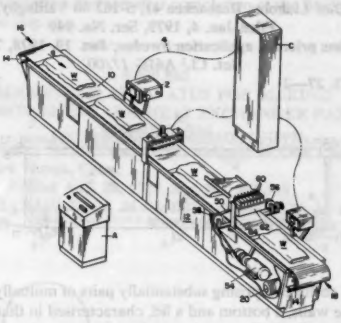
(c) a pair of locking members secured in the inboard portion of said housing and having opposed jaws engaging opposite portions of said handle, and means tensing said jaws to grip said handle, whereby the one portion of said housing is secured to said handle by said key and an inboard portion of said housing is secured to said handle by said locking members.

4,209,878

AUTOMATIC MEAT INSPECTING AND TRIMMING MACHINE AND METHOD

Howard C. Albert, 30 Plymouth Rd., Longmeadow, Mass. 01106

Filed Mar. 20, 1978, Ser. No. 888,006
Int. Cl.[3] A22C 17/00
U.S. Cl. 17—52 2 Claims



1. A method of trimming the fat layer from a meat cut comprising the steps of:

measuring the local values of the depth of the fat layer by probing the meat cut in a plurality of sites as the meat cut is conveyed past a first measuring station, generating a plurality of signals representing the depth measurements at the respective sites, storing the generated values in a memory as representative of the fat profile,

conveying the meat cut past a second trimming station,

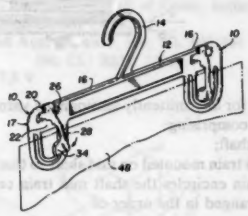
moving an endless band saw blade in a path transverse to the direction of movement of and around the meat cut with the run of the blade above the meat cut being laterally and vertically displaced along the transverse path from its normal reference position according to the generated fat profile by a profile sensing member activated by and responsive to the values stored in the memory.

4,209,879

CLAMP

Erkki Paajanen, 1308 NE. First Ave., Ft. Lauderdale, Fla. 33304

Filed Jun. 22, 1978, Ser. No. 918,099
Int. Cl.[2] A44B 21/00
U.S. Cl. 24—248 R 10 Claims



1. A clamp adapted to grip articles, comprising: a first jaw and a second jaw; said first jaw having, adjacent one end thereof, a slot and the other end having resilient article receiving means; said second jaw comprising an elongated arm having, on one end, means engaging one side of said slot providing a pivot means for said arm and indexing means engaging an

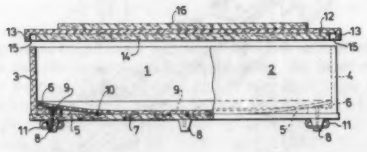
opposite side of said slot from a fully opened position to a closed gripping position, said indexing means comprising a series of corrugations disposed in an arc of a circle about said pivot means to provide a resilient step-by-step motion to said pivoted arm; and means on the other end of said arm, cooperating with said resilient article receiving means, to grip an article between them.

4,209,880

COFFIN

Sven-Olof Lidholm, Rosbacken 41, S-162 40 Vällingby, Sweden

Filed Jan. 4, 1979, Ser. No. 949
Claims priority, application Sweden, Jan. 19, 1978, 7800695
Int. Cl.[2] A61G *17/00*
U.S. Cl. 27—2 **7 Claims**



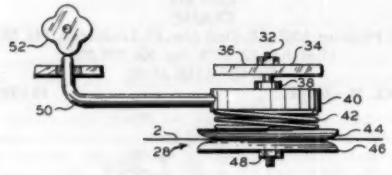
1. A coffin comprising substantially pairs of mutually opposing side walls, a bottom and a lid, characterised in that at least the side walls (**1–4**) comprise a robust corrugated paper material having inwardly folded bottom flaps (**5,6,5'**) which are fixed between an outer bottom plate (**7**) and an inner bottom plate (**10,27**), the edges of which abut the inner surfaces of the side walls (**1–4**), attachment means (**9**) of a type which can be readily applied for securing foot supports (**8,17,20**) to the undersurface of the outer bottom plate (**7**) being arranged to extend through at least the outer bottom plate (**7**) and the bottom flaps (**5,6,5'**).

4,209,881

KNITTING INTERMITTENTLY DRAWN YARNS

James H. Blore, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1978, Ser. No. 888,727
Int. Cl.[2] D02J *1/06*; D04B *15/44*
U.S. Cl. 28—243 **3 Claims**



1. A device for intermittently tensioning a yarn that is passed therethrough comprising:

(1) a fixed shaft;

(2) a tension train mounted on said shaft so that each element of the train encircles the shaft said train comprising elements arranged in the order of:

(a) a stop,

(b) a base plate,

(c) a helical spring,

(d) a pair of tension discs, and

(e) an adjusting means to provide tension on the base plate, spring, and tension discs mounted between the stop and the adjusting means, said adjusting means set to provide sufficient clearance between said tension discs to permit passage of yarn therebetween without stretching said yarn;

(3) a lever arm attached to said base plate, and

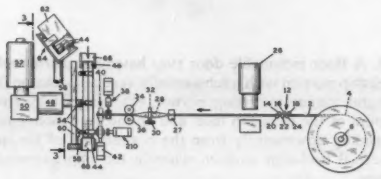
(4) a motor driven cam aligned to act on said lever arm intermittently to apply sufficient pressure to one side of said spring to cause sufficient pressure on yarn that is passed between said tension discs to stretch said yarn while the pressure is applied.

4,209,882

LIGHT CELL AUTO SLEEVER

John J. Strickland, Alachua, and Thomas H. Hoover, Gainesville, both of Fla., assignors to General Electric Company, Gainesville, Fla.

Filed Sep. 19, 1978, Ser. No. 943,753
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—33.52 **17 Claims**



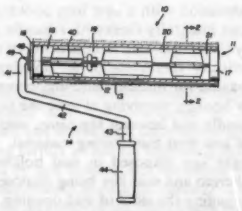
1. An aparatus for applying and affixing a heat shrinkable dielectric sleeve to a galvanic cell said apparatus including cell feeding carrousel means, means for feeding tubular sleeve material from a supply spool and for cutting sleeve length sections from the fed end of said material, means for gripping and opening each sleeve length section as said section is cut, battery test means on said carrousel, means on said test means for rejecting from said carrousel cells found defective by said test means, means for aligning said gripped and opened sleeve section with a cell on said carrousel which has passed said test means and is to be sleeved, means for pushing said cut section from said gripping means onto said cell and heater means for heating and shrinking said cut section of said sleeve material on said cell.

4,209,883

PAINT APPLICATOR ROLLER CONSTRUCTION

Gary D. Hawk, Iola, Kans., assignor to Harding Development Company, Clearwater, Fla.

Filed May 5, 1978, Ser. No. 903,142
Int. Cl.[2] B21B *13/02*
U.S. Cl. 29—116 R **2 Claims**



1. A molded plastic paint applicator cage for rotatable mounting upon the axle of an applicator handle frame and for insertion within an elongated tubular applicator core, said cage comprising:

a circular disk-like end member having a central bore for receiving the frame axle;

a journal bearing member axially spaced apart from the end

member for location within the core at a distance from the end member and including a journal socket for rotatably receiving the free end of the frame axle, and having radially outwardly extending strip portions interconnecting the end member with the bearing member, said strip portions having outer edge portions for closely fitting within the wall defining the interior of the tubular core, said strip outer edges being bowed outwardly relative to the axis of said cage to provide outwardly bowed spaced apart side edge engagement portions with the core;

the end member and bearing member each being split into two parts along a diametric plane, and means for releasably interconnecting the two parts to form the cage rotatably mounted upon the frame axle;

said means for releasably interconnecting including an integral hinge portion interconnecting said two parts for hinging the parts either open, i.e., side by side, or closed, i.e., into bearing forming alignment for engagement with said axle;

the distance between the end member and the bearing member being less than one-half of the length of the tubular core, wherein the frame axle correspondingly extends within the core a distance less than one-half of the length of said core;

an outer plug member for closing the end of the tubular core opposite to the end closed by said end member, and said member, plug and bearing member all being interconnected as one integral molding, including the integral hinge portion;

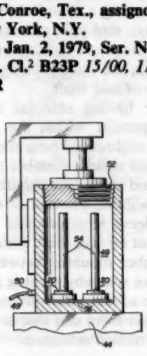
and said end member including a pair of semi-circular bore halves which together form a first bearing, said journal bearing member including a pair of annular socket halves which together form a second bearing, first and second disk-like fastening means being mounted to said frame axle at spaced apart locations, said first and second disk-like fastening means encased by said bore halfs and said annular socket halves, respectively, when said hinged parts are brought into bearing forming alignment for engagment with said axle to maintain said axle against longitudinal movement relative to said cage.

4,209,884

METHOD OF FORMING VALVE SEATS

Eulas R. Atkinson, Conroe, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 212
Int. Cl.[2] B23P *15/00, 11/02*
U.S. Cl. 29—157.1 R **6 Claims**



1. A method of forming a valve seat comprising the steps of:

forming in a seating surface of the valve seat a serrated annular groove having a bottom surface and opposite sides each presenting a plurality of serrations;

inserting a resilient insert into said groove with a portion of the insert protruding out of the groove beyond said seating surface;

pressing said insert toward the bottom surface of the groove with sufficient force to effect cold flowing of the insert into said serrations;

inserting the entire valve seat into an enclosed hydraulic fluid pressure chamber with the insert in said groove of the valve seat;

applying hydraulic fluid pressure to said pressure chamber for a time period between around ten (10) to fifty (50) minutes at a level of at least approximately one and one half times the maximum working pressure of the valve in which said valve seat is to be used to bottom said insert against the bottom surface of the groove along the entire length of the groove; and

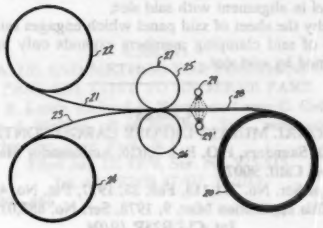
machining the protruding portion of said insert to provide a sealing surface thereon after completion of the fluid application step.

4,209,885

PROCESS AND APPARATUS FOR MAKING COMPOSITE SHEET AND HEAT EXCHANGER PANELS THEREFROM

Joseph Winter, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 28, 1978, Ser. No. 937,118
Int. Cl.[2] B21D *53/04, 26/04;* **B21K** *29/00;* **B23P** *15/26*
U.S. Cl. 29—157.3 V **22 Claims**



11. A process for producing a metal composite adapted for use in heat exchanger panels comprising:

providing at least two sheets of metal;

cold rolling said sheets of metal together to a desired reduction in thickness to form a green bond therebetween; and

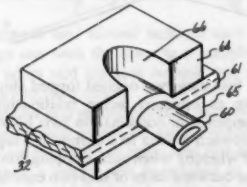
immediately after said cold rolling, quickly cooling said green bonded sheets to a temperature at which bond enhancement due to a temperature increase in said sheets during said cold rolling will not occur.

4,209,886

PROCESS AND APPARATUS FOR MAKING HEAT EXCHANGER PANELS

Joseph Winter, New Haven; John F. Breedis, Trumbull, and Brian Mravic, North Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Aug. 28, 1978, Ser. No. 937,336
Int. Cl.[2] B23P *15/26*
U.S. Cl. 29—157.3 V **10 Claims**



9. In a process for forming a heat exchanger having a desired pattern of inflated tubular passageways from an as-rolled com-

posite metal panel in the absence of a stop weld pattern defining said tubular passageways, said panel comprising at least two sheets of metal having a bond therebetween which can be broken by inflation; said process comprising:

inserting an inflation needle into said composite metal panel between said sheets;

and following the insertion of said inflation needle placing said panel with said inflation needle inserted therein into an inflation press including at least one die having a cavity defining said tubular passageways, and inflating said desired pattern of tubular passagewnys in said panel; the improvement wherein:

said step of inserting said inflation needle into said composite metal panel comprises:

preventing excessive peeling-apart of said sheets of said composite metal panel upon insertion of said inflation needle, said step of preventing excessive peeling-apart of said sheets, comprising the steps of:

providing a first clamping member and a second clamping member arranged to clamp said composite metal panel therebetween at an edge thereof wherein said inflation needle is to be inserted, at least one of said clamping members including a slot defining an opening immediately adjacent to said panel of limited extent and extending inwardly said panel from said edge thereof;

and inserting said inflation needle between said sheets of said panel in alignment with said slot;

whereby the sheet of said panel which engages said at least one of said clamping members expands only in an area defined by said slot.

4,209,887

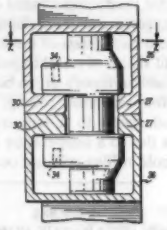
SECTIONAL MULTI-PURPOSE CARGO CONTAINER

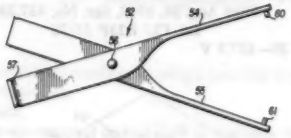
George D. Saunders, P.O. Box 70026, Ambassador Station, Los Angeles, Calif. 90070

Division of Ser. No. 771,113, Feb. 23, 1977, Pat. No. 4,144,984. This application Mar. 9, 1978, Ser. No. 885,017

Int. Cl.² B23P *19/04*

U.S. Cl. 29—240 **6 Claims**





1. A device for fastening two opened topped shipping containers together in an opposed facing relationship at their corners which comprises in combination two hollow cuboid members which are each affixed to a corner of a separate said shipping container whereby when such shipping containers are secured togther the outward faces of said two cuboid members are in engagement, matching openings in each said cuboid member, a removable elongated locking member received in both said cuboid members which extends through said openings and is received in the hollow interiors of said engaging cuboid members whereby opposite ends of said locking member are both in engagement with interior surfaces of said cuboid members opposite their respective said openings, each said cuboid member including shoulder means adjacent its respective opening, a pair of dogs extending normally from said locking member adapted upon being turned about the longitudinal axis of the locking member to be brought into engagement with said shoulders thereby clamping and securing said cuboid members together in said engagement, and means provided on said locking member for turning said locking member when said cuboid members are in said agreement, said turning means comprising apertures having a common longitudinal axis in said dogs, a tool in combination with the device having protrusions adapted to be received in said apertures, said protrusions extending towards each other from connecting supporting members, elongated means being provided for moving said supporting members relative to each other whereby the distance separating said protrusions can be increased and decreased within predetermined limits, and handle means extending normally from said elongated means opposite said protrusions.

4,209,888

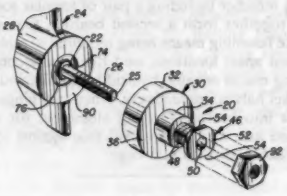
SHAFT PULLER

Theodore E. Glasscock, Sr., 908 Daniel, Cedar Hill, Tex. 75104

Filed Nov. 21, 1977, Ser. No. 853,517

Int. Cl.² B23P *19/04*

U.S. Cl. 29—263 **9 Claims**



1. A shaft puller for extracting a shaft from a surround structure, said shaft having a threaded exposed end normally receiving a nut thereon, said puller comprises:

a one piece sleeve structure having an internally threaded bore therethrough, the threads being of an opposite hand from the threads of said shaft,

a spindle member having external threads thereon for threadable engagement within the bore of said sleeve structure and an unthreaded bore therethrough to permit engagement of said spindle member on said shaft without engagement of said shaft, said spindle member having an end surface to facilitate rotation of said spindle member relative to said sleeve structure, and

a nut for engagement on said shaft with said sleeve member and spindle member mounted between said nut and the surround structure whereby turning said spindle member in the direction to advance said nut on the shaft withdraws the spindle member from said sleeve structure to pull the shaft from the surround structure.

4,209,889

CORROSION RESISTANT FASTENING SYSTEM AND METHOD

Joseph W. Silva, Northford, Conn., and Albert J. Duffield, Johnson City, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 27, 1978, Ser. No. 881,320

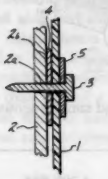
Int. Cl.² B23P *11/00*; A43B *23/20*; E01B *9/06*; F16B *15/00*

U.S. Cl. 29—432 **10 Claims**

1. A fastening system for use with a metallic target in a corrosive aqueous environment comprising a metal fastener

formed of a corrosion-resistant allow and adapted to be driven by a powder actuated tool, and at least one metal coupon, through which said fastener is driven, said coupon being formed of an alloy which is no more noble, in the galvanic series of metals and alloys, than the alloy of said fastener, but more noble than the alloy of the target.

9. A method for obtaining a corrosion-resistant fastening in a metallic target exposed to a corrosive aqueous environment, comprising the steps of:



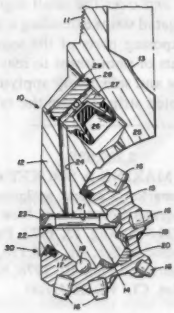
a. providing at least one planar metal coupon of a corrosion-resistant alloy, said alloy being more noble, in the galvanic series of metals and alloys, than the target;
b. providing a metal fastener of a corrosion-resistant alloy, said alloy being at least as noble as the alloy of said coupon, said fastener being adapted to be driven by a powder-actuated tool; and
c. driving said fastener through said coupon and into the target, said coupon thereby being held in intimate, juxtaposed contact with the target surface.

4,209,890

METHOD OF MAKING A ROTARY ROCK BIT WITH SEAL RECESS WASHER

Earl T. Koskie, Jr., Casper, Wyo., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 19, 1979, Ser. No. 4,778
Int. Cl.[2] E21B *9/10*
U.S. Cl. 29—450 **2 Claims**



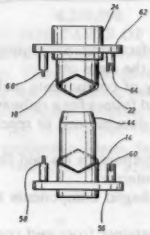
1. A method of constructing a rotary rock bit for operating in a drilling fluid containing abrasive particles, comprising the steps of:
providing a rock bit body having at least one depending arm with a bearing pin projecting from said arm;
providing a rolling cone cutter adapted to be mounted on said bearing pin, said rolling cone cutter having a base that will be located abutting said arm and a concave cavity projecting from a cone mouth with said cavity and cone mouth adapted to be positioned over said bearing pin;
a gap being produced between said base of said rolling cone cutter and said arm when said rolling cone cutter is mounted on said bearing pin, said gap being outside of said cavity;
producing a groove in the base of said rolling cone cutter around said cone mouth;
determining the size of the gap that will be produced when said rolling cone cutter is mounted on said bearing pin;
providing a multiplicity of washers of varying thickness;
selecting a washer from said multiplicity of washers with a thickness substantially the size necessary to allow the gap to be narrowed to a size which will not allow passage of most of the abrasive particles found in the drilling fluid;
providing an elastomer seal ring;
positioning said elastomer seal ring between said bearing pin and said rolling cone cutter in said concave cavity proximate said cone mouth;
positioning said washer in said groove; and
mounting said rolling cone cutter on said bearing pin with said washer substantially closing the gap between the base of said rolling cone cutter and said arm to prevent passage of most of the abrasive particles found in the drilling fluid.

4,209,891

APPARATUS AND METHOD FOR POSITIONING ONE PART RELATIVE TO ANOTHER PART

Raymond K. Lamb; Richard E. Weathers; Lacey C. Coffey, and Stephen J. Walker, all of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,515
Int. Cl.[2] E21B *43/01, 33/035*
U.S. Cl. 29—466 **25 Claims**



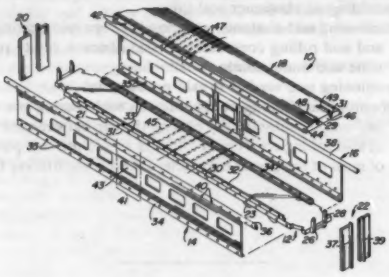
1. An alignment apparatus for rotationally positioning a second part relative to a first part comprising:
a first cylindrical guide adapted to be affixed to said first part, said first guide defining at an end thereof a first curvilinear surface; and
a second cylindrical guide adapted to be mounted on said second part, said second guide defining at an end thereof a second surface substantially identical to said first surface,
said first and said second surfaces each being adapted to engage one with the other in a complete mating contact only when said surfaces occupy one rotational position relative to each other;
said first and said second surfaces each being arranged such that when said guides are axially aligned and a longitudinal force is applied to bring said first and second surfaces together, a torque will be applied to said second guide relative to said first guide, said apparatus thereby being adapted to rotate said second part relative to said first part.

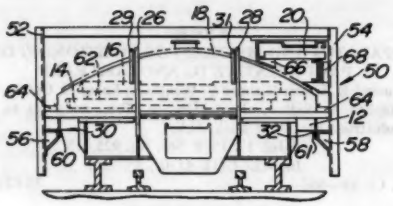
4,209,892

METHOD OF MANUFACTURING, PACKAGING AND ASSEMBLING A RAILWAY CAR

Gerard F. Hofstaedter, Glenside, and Lionel Sherrow, Huntingdon Valley, both of Pa., assignors to The Budd Company, Troy, Mich.

Filed Aug. 18, 1978, Ser. No. 934,686
Int. Cl.[2] B23P *21/00*
U.S. Cl. 29—469 **5 Claims**





1. A method of manufacturing, packaging and assembling a railway car comprising the steps of:

fabricating a plurality of components including floor, sideframes, roof and end frames for a railway car, said components having areas dimensioned to receive weld joints or bolt openings,

packing said other components on said floor component in an open bottom container,

transporting said packaged components to a desired location,

disassembling said container from said components,

connecting said sideframes to said floor,

connecting said end frames to said floor,

connecting said roof to said sideframes and said end frames.

4,209,893

SOLDER PACK AND METHOD OF MANUFACTURE THEREOF

John W. Dyce, Sidney, and Ronald F. Buczak, Poughkeepsie, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 24, 1978, Ser. No. 954,267
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—522 R **2 Claims**

1. The method of manufacturing a solder pack comprising:

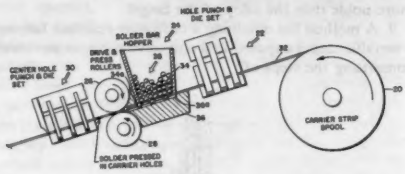
providing a continuous strip of heat resistant material;

advancing the strip and simultaneously providing a predetermined pattern of through holes in the material;

dropping a preform of solder material into each hole, the volume of each preform being slightly in excess of the volume of the hole in which dropped;

compressively deforming the preform of solder material in each hole so that the preform is forced against the sides of each hole to form a solder disc, each disc being coextensive with the top and bottom surfaces of the strip and held snugly in each hole;

advancing the strip and simultaneously providing an aperture in a central portion of each solder disc; and



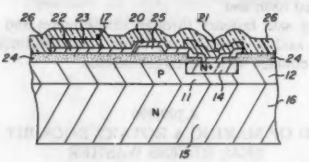
advancing the strip and simultaneously cutting the strip into the solder pack.

4,209,894

FUSIBLE-LINK SEMICONDUCTOR MEMORY

Ralph S. Keen, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1978, Ser. No. 900,550
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—577 R **5 Claims**



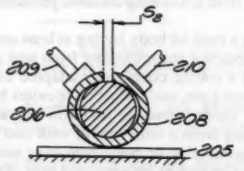
1. A method of making a semiconductor device including the steps of applying a coating of photoresist to define a plurality of small segments, depositing a thin film of conductive material on said face and over the small segments, patterning the film to leave elongated strips extending across the segments of photoresist and exposing parts of the segments, thereafter removing the segments of photoresist to leave raised portions in the elongated strips and selectively applying excess current to some of the elongated strips to fuse the raised portions.

4,209,895

METHOD OF MAKING A SOCKET CONTACT

Lloyd J. Powell, Newmarket, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 824,343, Aug. 15, 1977, Pat. No. 4,133,599, which is a continuation of Ser. No. 704,120, Jul. 12, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 949,412
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—874 **3 Claims**



1. The method of making an electrical socket contact comprising the steps of:

forming a conductive cylinder of a uniform inside diameter with a slot extending completely therethrough in a radial direction and over the complete length thereof and at one angular position therearound;

providing a non-deformable cylindrical rod having an outside diameter less than the inside diameter of said cylinder;

placing said rod coaxially inside said cylinder;

permanently deforming said cylinder by pressing the slotted side thereof toward said rod until portions of said cylinder between said slotted side and the side opposite thereto bend beyond their elastic limits to make said cylinder somewhat elliptical, a first inside diameter of said deformed cylinder extending between said slotted and opposite sides being less than that of a second inside diameter thereof perpendicular thereto; and

removing said rod from said deformed cylinder.

4,209,896

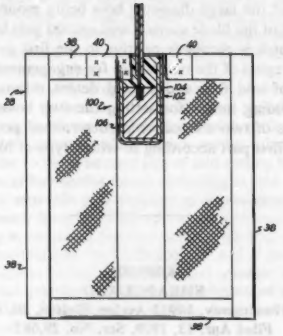
METHOD OF ASSEMBLY OF AN ANTI-CORROSION ANODE CONNECTOR SYSTEM

Robert Baboian, Johnston, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 673,177, Apr. 2, 1976, Pat. No. 4,098,663. This application Feb. 21, 1978, Ser. No. 879,040

Int. Cl.² H01R *43/00*; C23F *13/00*

U.S. Cl. 29—855 **3 Claims**



1. A method of assembling an anode connector for connecting a current carrying conductor cable to a permanent anode comprising:

providing a ductile, chemically inert metal;

forming the metal into a cup-shaped housing member having a closed end formed by a bottom wall and having a side wall depending therefrom, the side wall having a free end portion forming an open end, the bottom and side wall having a thickness which is essentially uniform throughout;

inserting an electrically conductive plug member in said housing having one end adjacent said closed end and having a second end facing toward said open end while being substantially removed from the open end;

electrically connecting said conductor cable to said plug member to provide a low resistance connection;

inserting a chemically insulating material in said housing for surrounding said electrical connection and filling said cup-shaped housing to provide a tight, leak-proof seal;

attaching said anode connector to an anode.

4,209,897

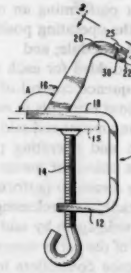
FIXTURE FOR HOLDING ZIPPER SLIDERS

Evan E. Davies, Condell Park, Australia, assignor to Textron Inc., Providence, R.I.

Filed Jun. 21, 1979, Ser. No. 51,362

Int. Cl.² B23P *19/04*

U.S. Cl. 29—768 **7 Claims**



1. A fixture for holding zipper sliders while assembling zipper stringers therethrough comprising:

a clamp having an open end for attachment to a work surface;

a standard attached to the upper surface of said clamp;

a slot in the upper edge of said standard adapted to receive a zipper slider, said slot having two sides and a plane bottom surface; and

a tip terminating the upper end of said standard, said tip having an upper surface coplanar with the bottom surface of said slot, and having two transversely rabbetted sides coplanar with the respective sides of said slot.

4,209,898

ASSEMBLY LINE FOR PARTS OF ELECTRONIC AND OTHER EQUIPMENTS

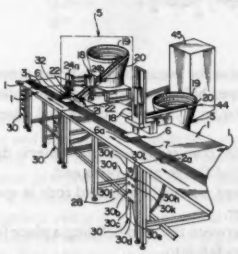
Jun Aoki, Katsuta; Takashi Hayashida, Mito; Shigesabroh Komatu, Katsuta; Seii Miyakawa, and Naoki Takahasi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 7, 1978, Ser. No. 940,353

Claims priority, application Japan, Sep. 12, 1977, 52-108840

Int. Cl.² B23P *21/00*

U.S. Cl. 29—783 **8 Claims**



1. An assembly line for parts of electronic and other equipment having a plurality of assembling stations for carrying out a plurality of production steps, said assembly line comprising:

a table assigned to each one of said plurality of assembling stations and each table having mounted thereon:

(a) endless conveyor means mounted on an upper surface of the table across thereof and movable from one end to the other end of the table;

(b) a drive source for driving said endless conveyor means;

(c) stopping means comprising a stop lever for engaging an

article conveyed by said endless conveyor means to stop the article in an operating position;

(d) positioning means comprising a positioning pin for insertion in a hole formed in said article stopped by said stopping means in the operating station so as to thereby engage the article and correctly position the same in the operating position; and

(e) operating means for performing an operation with the article positioned in the operating position in accordance with a predetermined schedule; and

a sequence controller provided for each of said assembling stations for effecting sequence control of a series of operations performed by various elements in each station including actuating said stopping means and said positioning means to stop and position in said operating position an article supplied by said endless conveyor means across said table, actuating said operating means to perform a predetermined operation with said article, and releasing said positioning means to convey the article again by said endless conveyor means upon completion of the performance of the operation; said tables and said sequence controllers in said plurality of assembling stations capable of being arranged in any combination as desired to provide an assembly line suitable for performing a plurality of different assembling operations.

4,209,899

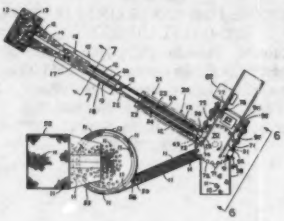
MEDICINE DROPPER CAP AND BULB ASSEMBLY APPARATUS

Peter Dragotta, 4 Bodie Rd., Wayne, N.J. 07470

Filed Jan. 11, 1979, Ser. No. 2,680

Int. Cl.³ B23P *19/00, 21/00*

U.S. Cl. 29—783 **10 Claims**



1. In an apparatus for assembling medicine dropper caps and elastomeric dropper bulbs, said apparatus including means for feeding said bulbs to a downstream partial sssembly station comprising,

(a) a conduit for conveying said elastomeric dropper bulbs having a radial flange at an open end,

(b) a pair of tilted, rotatably mounted rods in spaced relation to each other,

(c) the space between the rods defining a place for the elastomeric bulb to fall into,

(d) the space between the rods further defining a space insufficient for radial flange at the open end of the bulb to pass through, and

(e) a means to contra-rotate the rods with their opposite surfaces moving upwardly and outwardly whereby the flange on the bulbs ride on the rods thereby moving the bulbs on the rods in the direction of the tilt,

(f) wherein said conduit has a bulb discharge end positioned over an upper end of the tilted rods to discharge dropper bulbs on to the rods to fall therethrough up to the radial flange thereon for subsequent movement thereon to said downstream partial assembly station.

4,209,900

RETRACTABLE BLADE KNIFE

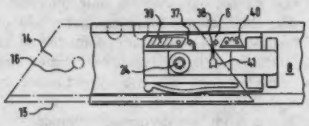
Richard Gilbert, Sheffield, England, assignor to Stanley Tools Limited, United Kingdom

Filed Jan. 5, 1979, Ser. No. 1,387

Claims priority, application United Kingdom, Jan. 25, 1978, 3088/78

Int. Cl.² B26B *1/08, 5/00*

U.S. Cl. 30—162 **6 Claims**



1. A retractable blade knife comprising an elongated casing and a blade carrier which is longitudinally movable in the casing for advancing and retracting a blade, the casing having a channel therein, the blade carrier including first and second parts, the first part being longitudinally slidably guided in the channel in the casing and carrying the second part, the second part of the blade carrier including first detent means, the casing including second detent means, said first detent means being resiliently biased into engagement with said second detent means for holding the blade carrier releasably in different positions along the casing, the blade carrier including a relatively large diameter boss for locating in a relatively large diameter hole in one type of blade, the blade carrier also having a relatively small diameter boss for locating in a relatively small diameter hole in another type of blade, the small diameter boss projecting from one end of the large diameter boss, the other end of the large diameter boss being mounted on said second part of the blade carrier, said second part being a rigid member which is pivotable relative to the first part about an axis in the region of the two bosses for engagement and disengagement of said first and second detent means, the blade carrier including means for setting the two bosses to either selected one of two alternative predetermined positions relative to said first part according to which type of blade is to be used.

4,209,901

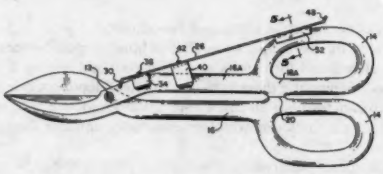
SHEARGUARD

Joseph M. Hemingway, 14932 Avelon, Dolton, Ill. 60419

Filed Apr. 13, 1979, Ser. No. 29,662

Int. Cl.² B26B *13/00*

U.S. Cl. 30—233 **5 Claims**



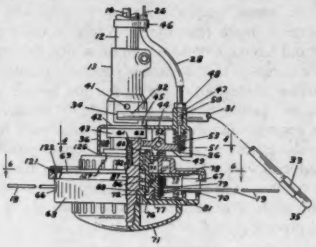
1. The combination of a pair of pivotally mounted elongated sheet metal cutting shear members having coplanar loop handles at one end and a sheet metal hand guard comprising a flat member supported normal to said planar loop handles resting against the outer edge of one of the loop handles and including clamp members intermediate its ends engaging said one of said members in the plane of its pivotal movement against relative lateral movement.

4,209,902

APPARATUS FOR CUTTING VEGETATION

James L. Moore, and Lenoard G. Ewing, both of Houston, Tex., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 19, 1977, Ser. No. 861,788
Int. Cl.[2] A01D *35/26;* A01G *3/06*
U.S. Cl. 30—276 4 Claims



1. In an apparatus for cutting vegetation having a prime mover, a rotatable cutting head, a tubular extension interconnecting the prime mover and a cutting head with an enclosed power transmitting cable, and an accessory handle for supporting the apparatus adjacent the prime mover, the improvement comprising:

(a) a housing mounted on the tubular extension adjacent said cutting head, said housing having a lower circular bearing skirt, a superimposed planar shoulder, transverse guard support means and bolt means:

(b) an actuator housing carrying upstanding ears adapted to be secured by said be bolt means to said housing, said actuator housing having a centra! opening received about the circular bearing skirt with an upper abutment surface engaging said planar shoulder and said actuator housing carrying internal stop members for limiting upward movement of an actuator lever in response to a biasing member connected at one end of said actuator lever;

(c) mechanical line feeding means carried on said cutting head and adapted to feed upon a mechanical signal a predetermined length of cutting line from said cutting head outwardly into a cutting plane which resides substantially perpendicular to the rotational axis of said cutting head and said mechanical line feeder means including in said cutting head in axially movable gear forming an escapement;

(d) an actuator lever pivoted within said actuator housing and carrying at one end a fulcrum to apply the mechanical signal to said mechanical line feeding means and at the other end a connection to a control cable and said actuator level reciprocating said gear for feeding the predetermined length of said cutting line from the said cutting head into said cutting plane; and

(e) a control lever pivotally mounted on the accessory handle and adapted to move said control cable to operate said actuator level.

4,209,903

SPRINKLER HEAD TRIMMING DEVICE

Warner R. Owens, 1205 Valhalla Dr., Clearfield, Utah 84015

Filed Feb. 21, 1978, Ser. No. 879,159
Int. Cl.[2] A01G *3/06;* B26B *3/04*
U.S. Cl. 30—302 11 Claims

1. A cutting tool for clearing debris, grass and soil from a ground located sprinkler head while preserving a clean cut exterior grass line, comprising:

(a) a surpporting shaft which defines an axis of rotation;

(b) a handle means attached near one end of said shaft and projecting outward therefrom for enabling application of rotational force thereto; and

(c) a tubular cutting member attached at the other end of said shaft in substantial coaxial orientation therewith, said tubular member having a lead cutting edge generally in a plane substantially normal to said axis for cutting a circumscribing path around the sprinkler head to obtain a properly trimmed grass line and further comprising at least one blade projecting in an inward direction only from a lower section of the inner surface of said tubular

member and terminating at an unobstructed free end and having a maximum length sufficient to allow passage of said tubular member around said sprinkler head during insertion of said tubular member into the ground, said inward projecting blade having its forward cutting edge pitched at a downward slant relative to its rearward edge.

4,209,904

RIDER CLIP WITH OFFSET RETENTION FLAPS AND RETENTION BAR FOR DENTURE

Peter E. Staubli, 677 Bounty Dr., Foster City, Calif. 94404

Filed Oct. 23, 1978, Ser. No. 953,372
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—177 10 Claims

1. A prosthetic denture rider clip adapted to be secured to a bridge piece and operative to removably couple onto a retention bar having an arcuate transverse cross-section and secured to an abutment in a jaw, said clip comprising an open tubular segment of a resilient, substantially corrosion-resistant material, said segment being of a longitudinal extent not substantially exceeding the breadth of a tooth, and comprising a dorsal wall section, first and second inwardly arched side wall sections integral with said dorsal wall section and disposed opposing one another at a minimum separation of less than the diameter of the retention bar, first and second retention flaps protruding outwardly from said opposing ends on opposing sides of a dorsal plane substantially bisecting said dorsal wall section, and first and second grooves parallel with said dorsal plane and disposed on the outer surfaces of said tubular segment at boundaries of said side wall sections with said dorsal wall section, wherein said dorsal wall section and said flaps are adapted to be secured within a casting of said bridge piece and said side wall sections are adapted to be free of said casting

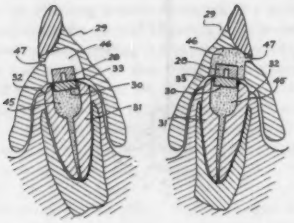
such that lateral flexure of said side walls is concentrated at said flexure grooves.

4,209,905

DENTURE RETENTION

Barrie R. D. Gillings, Sydney, Australia, assignor to University of Sydney, Sydney, Australia

Filed May 10, 1978, Ser. No. 904,421
Claims priority, application Australia, May 13, 1977, PD0090
Int. Cl.[2] A61C *13/00*
U.S. Cl. 433—189 **18 Claims**



1. A method of retaining a denture in place, the method comprising:

mounting a first magnet element to a support associated with a person's jawbone, the first magnet element having a generally horizontal surface portion thereof exposed adjacent the gingival margin of the person's gum,

locating a second magnet element in a denture to be worn by the person, the second magnet element having a generally horizontal surface portion thereof exposed to contact the exposed surface portion of the first magnet element when the denture is fitted to the person and the surface portions of the two magnet elements being magnetically attractive, and

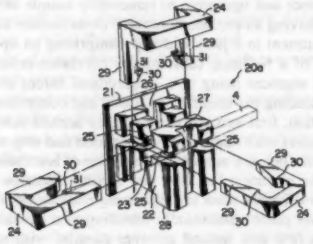
locating the denture in the person's mouth in a position such that the second magnet element is located to align substantially vertically with the first magnet element and such that said surface portions of the first and second magnet elements abut when the denture is fitted to the person.

4,209,906

ORTHODONTIC APPLIANCE (BRACKET AND LOCK PIN)

Kinya Fujita, 326 Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed Nov. 21, 1977, Ser. No. 853,481
Claims priority, application Japan, Dec. 23, 1976, 51-155429
Int. Cl.[2] A61C *7/00*
U.S. Cl. 433—11 **13 Claims**



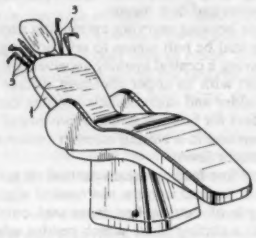
1. An orthodontic bracket adapted for connection to an orthodontic arch wire, comprising: a flange having a surface shaped to conform to the shape of a portion of the lingual surface of the crown of a tooth; a tip portion projecting from the opposite surface of said flange and having an occlusal side at the top thereof, a gingival side at the bottom thereof, opposite lateral sides and a lingual side at the end thereof remote from said flange, said tip portion having a vertical groove located between said flange and said lingual side of said tip portion and opening to said occlusal side for receiving the orthodontic arch wire, said vertical groove extending between the opposite lateral sides of said tip portion and having a greater vertical depth than the thickness of the orthodontic arch wire and having a bottom wall on which the orthodontic arch wire can rest so that it extends generally parallel with the lingual surface of the tooth, said tip portion having horizontal groove means opening to said lingual side for receiving fastening means for retaining the orthodontic arch wire in the bottom of said vertical groove, said horizontal groove means intersecting said vertical groove at a location thereon vertically upwardly spaced from said bottom wall such that the orthodontic arch wire can be disposed entirely below said horizontal groove means.

4,209,907

DENTAL TREATMENT CHAIR ASSEMBLY

Naonobu Tsukada, Joyou, and Katsuyoshi Nishimura, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 1, 1978, Ser. No. 874,197
Claims priority, application Japan, Feb. 1, 1977, 52-10450
Int. Cl.[2] A61C *19/00*
U.S. Cl. 433—33 **6 Claims**



1. A dental treatment chair assembly comprising:

a dental treatment chair, a backrest forming part of said chair, a shoulder part on said backrest, flexible connecting pipes extending from said shoulder part of said backrest;

instruments on said flexible pipes, the improvement comprising:

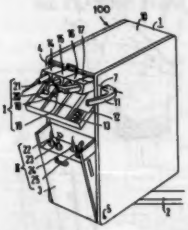
a plurality of first cartridge boxes, each of said boxes containing a flexible pipe and means for permitting extension and causing retraction of its flexible pipe therein, each said flexible connecting pipe having a fixed end position inside its first cartridge box, each said fixed end being detachably connected by a detachable pipe joint so that each first cartridge box can be removed, an instrument mounted on each said connecting pipe so that said dental treatment instrument can be extended and retracted to retract the corresponding dental treatment instrument, said cartridge boxes being positioned so that said instruments are positioned to extend over the top of the shoulder part of the backrest; and

a plurality of second cartridge boxes, each of said second cartridge boxes being removably attached to a selected one of said first cartridge boxes to be associated therewith, each said second cartridge boxes comprising a controller to control the function of its associated first cartridge boxes, said second cartridge boxes being positioned in said dental treatment chair backrest.

4,209,908
MOBILE DENTAL UNIT

Ernst O. Fleer, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,988
Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719715
Int. Cl.[2] A61C *19/02*
U.S. Cl. 433—78 17 Claims



1. In a mobile dental unit comprising a housing of a tabletop height and having a width, which is less than half the heights, said housing on a narrow side being provided with a plurality of side-by-side storage receptacles for dental handpieces, each of said dental handpieces having a supply hose extending through the receptacle to a supply source with means for taking up the supply hose, the improvements comprising the receptacles for the handpieces being arranged in two separate rows with a first row of receptacles containing receptacles for primary dental handpieces and a second row of receptacles containing receptacles for the secondarily used handpieces, means for supporting each of the rows in the housing for movement relative to each other and for movement of each row between a storage position within the housing to a working position with the receptacles extending from the housing to enable removal of the handpieces from the respective receptacle with the second row being disposed beneath the first row, said means for supporting also supporting a guide pulley for each receptacle of the first row adjacent the receptacle and immediately below the top of the housing, said means for supporting positioning the receptacles in varied relation to each other to improve access to the handpieces received therein, and said means for taking up the supply hoses for the first row of receptacles including means for retracting the supply hoses into the housing when the handpieces are not in use.

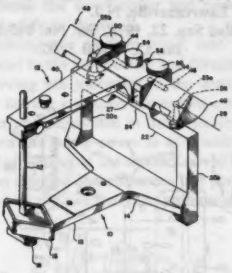
4,209,909
DENTAL APPARATUS

Robert L. Lee, 22937 Grand Terrace, Colton, Calif. 92324

Continuation-in-part of Ser. No. 581,208, May 27, 1975, Pat. No. 4,034,475, which is a continuation-in-part of Ser. No. 485,158, Jul. 1, 1974, Pat. No. 4,034,474. This application Jul. 11, 1977, Ser. No. 814,815
Int. Cl.[2] A61C *11/00*
U.S. Cl. 433—57 4 Claims

1. In dental apparatus for simulating human jaw movements comprising a first frame having a pair of styluses defining a hinge axis; a second frame having means cooperating with said first frame for guiding movement of said frames relative to each other in a controlled three-dimensional guide path including transverse, protrusive and vertical directions from a centric position wherein the frames are transversely centered on each other and said second frame is in the rearwardmost position relative to said first frame, characterized by:

said guiding means including a pair of guide members each attached to a pin rotatably mounted on said second frame on an axis concentric with said hinge axis when the frames are in said centric position, said guide members having wall means defining pathways for receiving said styluses, said pathways including a curved upper wall, a rear wall and a medial wall having a curved portion adjacent the rear wall, said walls guiding movement of one side of said second frame medially, protrusively and vertically in a curved three-dimensional path while the other side of said second frame moves only laterally;

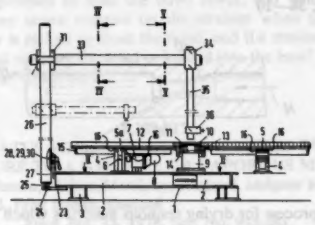


said wall means defining said pathways further including a forward wall and a lateral wall connected to said medial and said back wall to form an integral side wall unit, separate from but adjacent to said upper wall, which is removeably mounted on said guide members, and which is selected from a group of units that provide different amounts of immediate side shift of said styluses, and said medial wall curved portion being an arc size that is proportional to the magnitude of side shift provided.

4,209,910
AUXILIARY DEVICE FOR VERTICAL TURNING AND BORING MACHINE TOOLS

Gunther Rathsack, and Reinhard Hendel, both of Hamburg, Fed. Rep. of Germany, assignors to Gunther Rathsack Ingenieurtechnik, Hamburg, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,467
Int. Cl.[2] B27G *23/00*
U.S. Cl. 33—185 R 13 Claims



1. An auxiliary device for use with vertical turning and boring machine tools having rotary work surfaces comprising:

(a) a generally circular-shape pallet having:

(1) centering means for centering the pallet on a rotary work surface of a vertical turning and boring machine tool, and

(2) means for securing a workpiece in a desired position on the pallet; and

(b) support means for supporting said pallet comprising:

(1) a frame,

(2) pillow block support means carried by said frame and cooperating with said centering means for supporting said pallet for rotation with respect to said frame, and

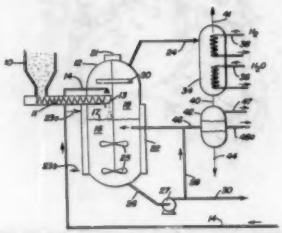
(3) means for adjustably mounting carrying devices for measuring devices and auxiliary adjusting devices.

4,209,911

METHOD AND APPARATUS FOR DRYING A MOISTURE-CONTAINING PARTICULATE MATERIAL

Carl L. Weber, Pipersville, Pa., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Sep. 22, 1978, Ser. No. 945,026
Int. Cl.² F26B 3/00
U.S. Cl. 34—9 20 Claims



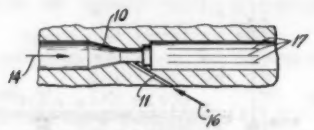
18. An apparatus for drying moisture-containing particulates comprising; a cylindrical vessel with two closed ends and having a vapor outlet near the top end thereof, a liquid outlet near the bottom end thereof, and an inlet for a particulate material, an inlet for a hot hydrocarbon liquid having a carbon liquid, all of the inlets being intermediate the vapor outlet and the liquid outlet, and a plurality of agitator means mounted on a cylindrical shaft which is connected to a rotary driving means, one of the agitator means being mounted in the top portion of the vessel and above the particulate feed.

4,209,912

PROCESS AND APPARATUS FOR THE DRYING OF RESINOUS MATERIALS

Henry P. Barker, Lock Haven, Pa., assignor to General Electric Company, Pittsfield, Mass.

Filed Jan. 16, 1978, Ser. No. 869,527
Int. Cl.² F26B 3/08
U.S. Cl. 34—10 9 Claims



1. A process for drying resinous materials which comprises:
(a) forming a superheated solution of the resinous material and
(b) spraying the superheated solution through one or more venturi shaped nozzles at high pressure.

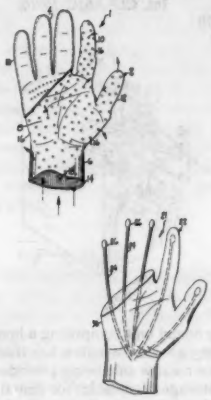
4,209,913

METHOD AND DEVICE FOR DRYING GLOVES

Lloyd A. Wallin, 1200 Red Oak Ct. North, Burnsville, Minn. 55337, and David E. Filkins, Big Leach Resort, Walker, Minn. 56484

Filed Dec. 27, 1977, Ser. No. 864,695
Int. Cl.² F26B 7/00
U.S. Cl. 34—21 1 Claim

1. A method for drying a golf glove, which comprises:
(a) providing a three dimensional drying member which substantially resembles a human hand;
(b) applying a conditioning agent for the golf glove onto the drying member before the golf glove is placed thereon, whereby the conditioning agent is imparted to the golf glove as the golf glove dries on the drying member;
(c) placing the golf glove onto the drying member such that



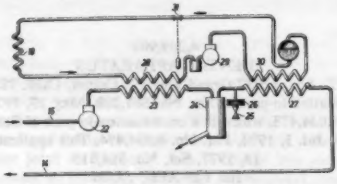
the golf glove is maintained thereon in an open orientation similar to that in which the glove may be worn on a human hand;
(d) allowing the golf glove to remain on the drying member for a period of time which is sufficient to dry the golf glove; and
(e) removing the golf glove from the drying member after the glove is dry.

4,209,914

METHOD AND DEVICE FOR DRYING MACHINE PARTS

Berth U. Gustafsson, Österskär, Sweden, assignor to Projectus Industriprodukter Aktiebolag, Bromma, Sweden

Filed Dec. 9, 1977, Ser. No. 859,140
Claims priority, application Sweden, Dec. 10, 1976, 7613929
Int. Cl.² F26B 3/04
U.S. Cl. 34—27 14 Claims



1. An improved method for drying machine parts which have been washed with a washing liquid containing a solvent, comprising the steps of feeding the wet machine parts into a chamber, injecting dry, hot gas into the chamber and evacuating humid gas therefrom, the evacuated, humid gas being recirculated in a circuit and, upon being compressed and cooled, freed from its solvent contents in a liquid separator, and heated before re-injection into the chamber, the improvement comprising reducing the total gas pressure in the chamber by controlling the gas flow in said recirculation circuit, and reducing the partial pressure of the solvent in the chamber by cooling the gas in said chamber.

4,209,915

CONTROL ARRANGEMENTS FOR CLOTHES DRIERS AND CLOTHES DRIERS INCLUDING SUCH CONTROL ARRANGEMENTS

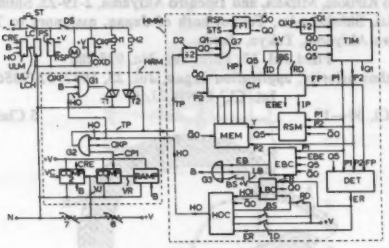
Alexander H. F. Keuleman, Horley, and David R. Hyde, South Croydon, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1978, Ser. No. 892,864

Claims priority, application United Kingdom, Apr. 5, 1977, 14312/77

Int. Cl.[2] F26B *21/10*

U.S. Cl. 34—48 12 Claims



1. A control arrangement for a clothes drier having a drying chamber, means for passing air through the chamber from an inlet to an outlet, and heating means for heating air adjacent said inlet; the control arrangement comprising a temperature sensor for location adjacent said outlet, heat regulating means for regulating the heat output of the heating means and responsive to said temperature sensor, and means for monitoring said heat output to switch off the heating means comprising means for producing electrical pulses such that the number of said pulses occuring in a given time interval is a predetermined function of the total said heat output in that time interval, means for counting said pulses, means responsive to said counting means for selecting the commencement of a reference time interval of predetermined duration, means responsive to said counting means for storing a digital value which is a predetermined function of the number of said pulses occuring in said selected reference time interval, said number of pulses occurring in said reference time interval being a reference value, and detection means responsive to the stored digital value and responsive to the counting means for detecting when a drypoint time interval of predetermined duration occurs during which the number of said pulses is less than a predetermined proportion of said reference value, said predetermined proportion corresponding to a predetermined degree of dryness of the clothes.

4,209,916

HAND-OPERATED KITCHEN APPLIANCE FOR DRYING VEGETABLES AND THE LIKE

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Sep. 25, 1978, Ser. No. 945,301

Int. Cl.[2] F26B *17/30*

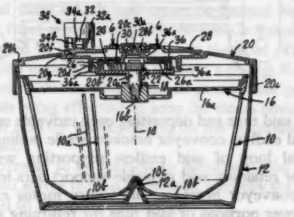
U.S. Cl. 34—58 3 Claims

1. A hand-operated kitchen appliance for drying vegetables and the like comprising:

an open-top bowl and an open-top strainer supported by the bowl for rotation therein about a vertical axis, said strainer having a cover which closes the strainer by fitting frictionally at the open top thereof and is manually removable therefrom and has a centrally located keyhole, and said bowl having a cover closing the bowl by fitting over the open top thereof and enclosing the strainer and strainer cover,

a pair of cover-retaining latches secured to the outer side of the bowl near the top thereof and spaced from each other around the circumference of the bowl, said bowl cover having a groove extending around the exposed top periphery thereof and each of said cover-retaining latches having a hook extending toward the bowl cover and fitting within the groove thereof when the cover is in position to close the bowl, said cover-retaining latches being resilient and biased to urge said hooks toward and into the groove, said latches being deformable manually to move the hooks thereof away from the groove and the bowl cover to thereby release the bowl cover and permit manual removal thereof from the bowl,

means for driving the strainer bowl, said driving means being secured to the bowl cover and comprising a vertical strainer-driving pin journaled at the center of the bowl cover and having a shaped lower end extending toward the strainer and receivable in the keyhole of the strainer cover when the bowl cover is in position to close the bowl, said pin fitting in the strainer cover in a fit preventing relative rotation therebetween but permitting manual withdrawal of the pin from the strainer cover, a turning



cover rotatably mounted centrally on the bowl cover and having an offset crank handle and a step-up transmission connecting the turning cover to the driving pin to cause the pin to rotate at a given speed when the cover is rotated at a lower speed by means of the crank handle, said rotation at a given speed being imparted to the strainer cover through the pin and to the strainer through the frictional fit between the strainer cover and the strainer,

said appliance being made of molded plastic components fitted frictionally or by snap-in connections to form the appliance,

wherein the entire appliance may be picked up by holding only the bowl cover when the cover-retaining latches are in a position to hold the bowl cover, and wherein the strainer cover remains on the strainer when the bowl cover is picked up from the bowl, and the strainer can be picked up from the bowl or loaded into the bowl with the strainer cover on it.

4,209,917

APPARATUS FOR SUPPORTING ARTICLES DURING EXPOSURE TO A GASEOUS OR VAPOROUS MEDIUM

Ian L. Johnson, Melton Mowbray, England, assignor to Abaline Limited, Frog Island, England

Filed Jun. 13, 1978, Ser. No. 915,281

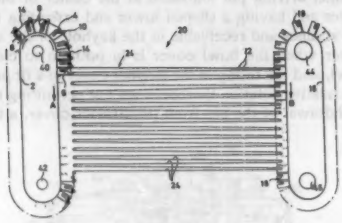
Claims priority, application United Kingdom, Jun. 15, 1977, 24987/77

Int. Cl.[2] F26B *13/10*

U.S. Cl. 34—149 13 Claims

1. Conveying apparatus for supporting sheets during exposure to a gaseous medium, said apparatus comprising a first endless conveyor having an upstanding run, a second endless conveyor having an upstanding run substantially parallel to said first endless conveyor upstanding run, each of said endless conveyors including a pair of endless drive members carrying brackets with the brackets of each pair of drive members being aligned, the aligned brackets of said first endless conveyor being joined by fixed support bars extending therebetween and connected thereto, movable support bars, each of said brackets of said first endless conveyor further having carrier means for

said movable support bars disposed between said fixed support bars, said brackets of said second endless conveyor having carrier means for said movable support bars, an endless supporting web associated with said first endless conveyor and generally disposed between paths of movement of said fixed support bars and said movable support bars, drive means for driving said endless conveyors in unison, feed means extending between upper portions of said runs for sequential engagement with said movable support bars carried by said first endless conveyor brackets and moving each movable support bar between adjacent ones of said fixed supports across the space



between said runs and depositing each movable support in one of second endless conveyor brackets while pulling a generally horizontal loop of said endless supporting web, retaining means for retaining said movable support bars in said second endless conveyor brackets, and return means extending between lower portions of said runs for returning said movable supports to said first endless conveyor and retraction of said loops.

7. The apparatus of claim 1 together with gaseous medium supply means associated with said second endless conveyor for supplying a gaseous medium into said loops.

4,209,918

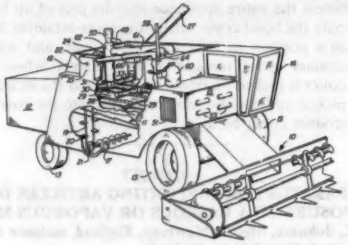
COMBINE GRAIN DRYING APPARATUS

Darrel J. Klein, R.R. 2, Box 10, Breckenridge, Minn. 56520

Filed May 29, 1979, Ser. No. 43,127

Int. Cl.[2] F26B *17/22*

U.S. Cl. 34—182 **12 Claims**



1. A grain harvesting machine having a grain threshing mechanism, a storage hopper into which grain from said threshing mechanism is transported for temporary storage, and an apparatus for drying the grain while in said storage hopper, wherein said apparatus comprises:

A. a grain collecting system mounted substantially horizontally in said storage hopper proximate to the bottom thereof, said system having an outlet and conduit means extending from perimeter portions of said storage hopper to said outlet, said conduit means having inlet openings along the upper portions thereof for entry of grain therein by gravity and having grain transport means therewithin for moving grain therethrough to said outlet,

B. a grain drying column mounted at said outlet of said collecting system and extending upwardly from said outlet, said column having an elevated exit port for discharge of grain therefrom and having therewithin a grain transport means for elevating grain from said outlet of said collecting system to said exit port of said column, and

C. plenum means for feeding heated air into said drying column, to thereby subject grain passing through said drying column to the removal of moisture therefrom by said heated air.

4,209,919

MODEL OF LIVING BODY

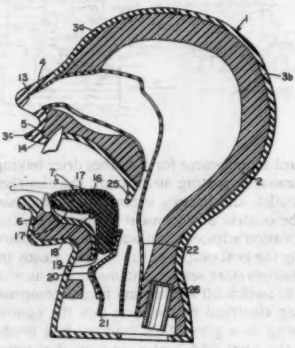
Ichiro Kirikae, Mitaka, and Taichiro Akiyama, 2-19-23, Shimoochiai, Shinjuku-ku, Tokyo, both of Japan, assignors to Taichiro Akiyama, Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,280

Claims priority, application Japan, Jul. 23, 1977, 52/98566

Int. Cl.[2] G09B *23/34*

U.S. Cl. 35—17 **5 Claims**



1. In an anatomical model including a main body comprising a hollow cranium portion, a mouth opening, a lower jaw portion, and a tongue portion located within said cranium portion inside of a mouth portion of said main body, the inner end of said tongue portion being attached to said lower jaw portion, the improvement wherein said tongue portion comprises a yieldable outer layer of silicone rubber and a yieldable inner body of silicone gel covered with said outer layer, a transversely extending guide rod attached to said cranium portion adjacent said lower jaw, said tongue portion extending upwardly from said lower jaw and outwardly over said guide rod toward said mouth opening whereby when an external force is applied to said tongue portion by grasping the outer end of said tongue, said tongue portion is yieldably deformed to reduce its cross section and is slideably guided by said guide rod, whereby said tongue portion and interior cranium portions can be observed from the exterior of said cranium portion.

4,209,920

OYSTER DREDGING APPARATUS

Harold J. Hebert, P.O. Box 31, Erath, La. 70533

Filed Jun. 29, 1978, Ser. No. 920,449

Int. Cl.[2] E02F *5/00*

U.S. Cl. 37—55 **10 Claims**

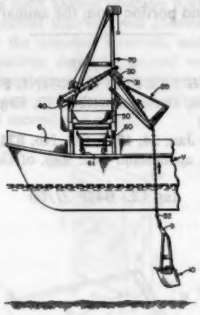
1. Apparatus for mounting on the deck of a motor vessel, useful for dredging oysters and other marine animals from water bottoms, which is comprised of

a dredge characterized as a container, permanently open at the front and provided with a forward draw member by virtue of which it can be attached to a chain, dragged along a water bottom by the motor vessel with open end forward, and filled with oysters scooped up from the water bottom,

a tilt frame with an open cage, and floor plate with a pulley

box mounted thereon, said pulley box being operatively communicated with a windlass having a barrel on which one end of a chain can be wound and the other of which can be passed through said pulley box and attached to the draw member of said dredge so that the dredge, when filled, can be raised from the water bottom and pulled into said cage and onto the floor plate of said tilt frame by operation of the windlass,

a conveyor mounted on the deck of the vessel below said tilt frame such that, as the chain moves the dredge to a rear-



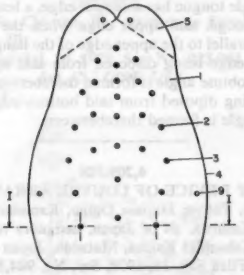
ward position of rest on the floor plate of the cage, the tilt frame can be pivoted rearwardly by the weight of the filled dredge, and pull on the chain to discharge the oyster contents of the dredge onto the conveyor so that the oysters can be transported to a location on the deck of the vessel for separation, assortment, grading and collection, and after discharge of the oysters the pull on the chain can be relaxed to allow retilting of the tilt frame to its original position and return of the dredge to the water bottom for refilling with oysters.

4,209,921

FLAT IRON FOIL

Josef Kochauf, Berg Am Laimstrasse 89, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 756,444, Apr. 21, 1977, abandoned. This application Feb. 10, 1978, Ser. No. 876,624
Claims priority, application Canada, Dec. 31, 1976, 269050
Int. Cl.[2] D06F *75/20, 75/38*
U.S. Cl. 38—97 **10 Claims**



1. In a cover to be mounted on the underside of a steam iron having a sole, a nose and sides extending from the sole to provide the steam iron with improved characteristics for ironing heat-sensitive materials and being composed of any of the usual covering materials for said sole of the steam iron, the cover comprising:

a sheet boot material formed of one piece having a base portion and two peripheral side portions connected with said base portion, said base portion being coextensive with the sole and said side portions being adapted to cover a portion of the sides of the iron;

at least two first raised portions formed on opposite sides of the base portion of the material normally facing the sole of the iron to which the cover is to be attached to form at least one steam conduit with the sole of the iron when the cover is secured to the iron;

a first group of perforations formed in said material between said first raised portions;

second raised portions forming a partial ridge on said base portion facing the sole of the iron and forming additional steam conduits with said first raised portions;

said two peripheral side portions being of sufficient extent to be folded upwardly about the iron to which the cover is to be secured thereby to form rippled or wave-shaped sides which partially encase the edge of the iron joining the sides thereof to the sole;

the material from which said cover is formed having an enlarged front portion operable to form a front holding part adapted to be overlapped over the nose of the iron and secured together thereby forming a pocket for the use of the iron from the same material as said base portion;

said conduits being effective to keep the steam emitted from the steam iron on wanted places on the undersides of the cover; and,

a spring operable to be secured to portions of the material and extend across the top of the iron whereby the material is secured to the iron;

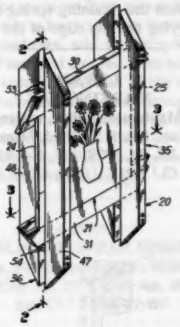
said spring providing tension in the material whereby heat expansion of the material is compensated to provide for an even distribution of steam from the sole of the iron through said perforations for passage through said sheet boot material.

4,209,922

ADJUSTABLE AND KNOCK-DOWN PICTURE FRAME CONSTRUCTION

Arthur J. Porreca, 233 Cuba Hill Rd., Huntington, N.Y. 11743

Filed Jun. 14, 1978, Ser. No. 915,318
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—155 **9 Claims**



1. A picture frame comprising a pair of edge engaging members for engaging along opposite edges of a picture, and a pair of clamping assemblies each extending between said pair of edge engaging members in clamping engagement therewith to hold said members in said edge engagement; said edge engaging members each having a recess for receiving the adjacent picture edge, and said recesses each opening laterally of the associated edge engaging member and being of a depth less than the picture thickness, for picture projection beyond the

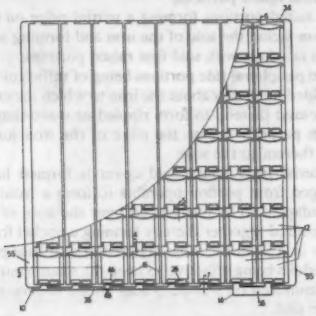
edge engaging member into clamped engagement with a clamping assembly.

4,209,923

SLIDE HOLDER TRAY

David W. Wendt, 5202 Schofield, Madison, Wis. 53716

Filed Jul. 31, 1978, Ser. No. 929,354
Int. Cl.[2] G09F 1/10
U.S. Cl. 40—158 B 20 Claims



1. In a slide holder tray including a plurality of slide holder cells each of which is adapted to receive therein a flat article having four edges such as a photographic slide, a slide holder cell comprising:

a. a pair of spaced parallel ribs defining two opposite sides of the slide holder cell;

b. a support shelf extending inwardly into the slide holder cell from each of the ribs and adapted to support opposite edges of the article;

c. a cross-member extending between the ribs to define the bottom of the slide holder cell;

d. a raised retainer extending upward from the cross-member to retain the bottom edge of the article; and

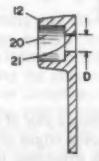
e. a flexible retaining spring formed extending between the ribs at the top of the slide holder cell, the retaining spring being manually operable between two stable positions, only one of which overlies the top edge of the article so that the article may be freely removed from the slide holder cell when the retaining spring is in its stable position not overlying the top edge of the article.

4,209,924

MARKING TAG

D. David Fearing, Mahtomedi, Minn., assignor to Fearing Manufacturing Co., Inc., South St. Paul, Minn.

Filed Jul. 26, 1978, Ser. No. 927,990
Int. Cl.[2] A01K 11/00; G09F 3/06
U.S. Cl. 40—301 14 Claims



1. An animal identification tag comprising:

a first portion comprised of a flexible material and including an area for an animal identification indicia;

a second portion comprised of a flexible material and including an area for an animal identification indicia, attachment means on said second portion for connecting said second portion to an animal's ear;

said attachment means includes a flanged impaler for fastening said animal identification tag to the animal's ear;

said flanged impaler comprising two materials, a first softer material for fastening through the animal's ear and a second harder material for penetrating the animal's ear; and

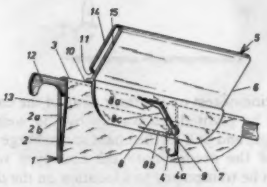
a neck connecting said first portion to said second portion with said neck having a region sufficiently weakened so that in the event an animal snags said first portion said first portion separates from said second portion without pulling said second portion from the animal's ear.

4,209,925

LABELING TAB FOR HANGING FOLDERS

Dirk A. Brügmann, Derkmannsstück 27, Ergste, Fed. Rep. of Germany (5843)

Filed Jan. 24, 1978, Ser. No. 871,939
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1977, 2751683
Int. Cl.[2] B42F 21/00
U.S. Cl. 40—359 6 Claims



1. A plastic tab for a hanging folder with an upper edge and at least one slot in a flap of the hanging folder, comprising:

a label carrying means for labeling the hanging folder and adapted to project beyond the upper edge of the folder;

a flap portion attached to said label carrying means for slidably contacting a face of the hanging folder, said flap portion having an inside face and extending along a given plane;

a single tongue stamped out of said flap portion and integral therewith, said tongue extending away from said inside face, out of said given plane of said flap portion for inserting into a slot in a hanging folder, such that when said tongue is inserted into the slot in the hanging folder said tongue extends toward and through the slot, said tab and the hanging folder are locked together and the hanging folder can be handcarried by grasping said tab, wherein said single tongue has an upper edge, a leading edge and a bottom edge, said upper edge when the tab is in place being parallel to the upper edge of the hanging folder, said leading edge being disposed from said upper edge such than an obtuse angle is formed therebetween, said leading edge being diposed from said bottom edge such that an acute angle is formed therebetween.

4,209,926

DISPLAY DEVICE OF LOUVRE ARRANGEMENT

Tetsuro Ueki, Tokyo; Hajime Ogino, Kamakura, and Shigeru Yaguchi, Kashiwa, all of Japan, assignors to Jyoban Jyuki Kensetsu Kabushiki Kaisha, Matsudo, Japan

Filed Sep. 21, 1978, Ser. No. 944,355
Claims priority, application Japan, Jul. 4, 1978, 53/81327
Int. Cl.[2] G09F 11/00
U.S. Cl. 40—437 6 Claims

1. A display device wherein a plurality of groups of strips are arranged in overlapping relation and the groups are moved through one another to expose one group at a time for viewing comprising:

(a) a display housing;

(b) groups of interleaved strips arranged in overlapping relation in the manner of louvre-like construction in said display housing;

(c) a driving mechanism disposed in said display housing; said driving mechanism comprising at least a pair of cam arrangements, driving means for driving said pair of cam arrangements, and vertical guide grooves positioned above said pair of cam arrangements, said cam arrangements having a cam element for each group of said interleaved strips, a first end plate and a second end plate, said cam elements each having concave portions on one side thereof at constant intervals and convex portions on the other side at the constant intervals, said first end plates having protrusions and said second end plates having holes, said cam elements being associated with each other by means of concavo-convex engagement and secured by said first and second end plates;

(d) a plurality of cam followers each having an arm at the upper portion thereof; said cam followers each being vertically slidable along said guide grooves of the driving mechanism;

(e) a frame structure releasably engaged with the driving mechanism;

(f) a plurality of elongated rigid elements which are movably supported by said frame structure; said elongated rigid elements each having an engaging member which contacts said arm of the cam follower to shift said rigid element in cooperation with a vertical movement of said cam follower;

(g) a plurality of cross arms for connecting said elongated rigid elements in a pair-fashion; and

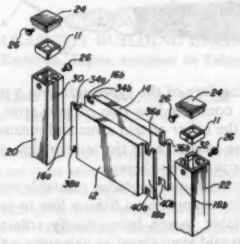
(h) a plurality of tabs for suspending the strips from the elongated rigid elements.

4,209,927

KNOCKDOWN SIGN TUBULAR INTERLOCKING DEVICE

Leo P. Donatelle, Chicago, Ill., assignor to Spanjer Brothers, Inc., Chicago, Ill.

Filed Jul. 10, 1978, Ser. No. 923,064
Int. Cl.² G09F 7/18
U.S. Cl. 40—607 **1 Claim**



1. In a knockdown sign having tubular posts spaced a predetermined distance apart and a signboard with winged extensions on each end supported therebetween, the improvement in lockup of said extensions with said posts comprising:

(a) a signboard lockup and support slot means in the bottom of each winged extension in cooperative support and interlocking relation with a slot in the adjacent wall of each post;

(b) a signboard lockup slot means in the top of each winged extension extending through the slot in the adjacent wall of each post within the same; and

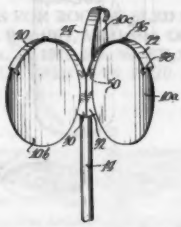
(c) a tubular signboard interlocking means operationally cooperating with the slot in the top of each winged extension within each of said posts and with the interior walls of the same, said tubular signboard interlocking means comprises an upward-facing slot in the top of the winged extension within said post adjacent to the interior wall of the same, and a tubular ring having the same outer peripheral shape as but slightly smaller size than the interior of said tubular post and a wall thickness equal to slightly less than that of the width of the upward-facing slot in the top of said winged extension in interlocking engagement with the upward-facing slot in the top of said winged extension and the interior walls of the post.

4,209,928

DISPLAY DEVICE

Allan G. Kraayvanger, Mundelein, Ill., assignor to Perrigraphics, Inc., Waukesha, Wis.

Filed Jun. 23, 1978, Ser. No. 918,402
Int. Cl.² G09F 7/18
U.S. Cl. 40—610 **6 Claims**



1. A display device made up from pieces of flexible material, said device comprising at least one sign having a perimeter and support means for said sign, said sign support means comprising a base, a strip of material secured from said base and having a free end arching around a portion of the sign, said strip and perimeter being in substantial contact throughout the extent of said strip from said base to said free end, means for securing said sign and strip near said free end, and means for securing said sign near said base, such that the sign and the strip interact in a mutually supportive relationship.

4,209,929

LANCE FOR SPEAR FISHING

Robert K. Mishima, 576-B Kukuau St., Hilo, Hi. 96720

Filed Oct. 30, 1978, Ser. No. 956,259
Int. Cl.² A01K 81/04
U.S. Cl. 43—6 **9 Claims**

1. A lance for spear fishing comprising: an elongated hollow tubular body; a section of elastomeric tubing material having one end attached to said tubular body and having a free end

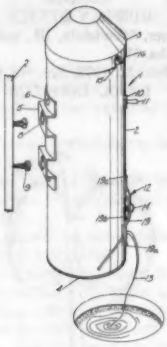
thereof extending away from said body; an elongated spearhead member having a transverse dimension slightly greater than the inner diameter of said elastomeric tubing material, said spearhead being insertable into said tubing material and being frictionally held therein; and an insert securely connected to the interior of said tubular body and having a longitudinally extending socket beginning at one end of said insert and extending to a position spaced from the opposite end of said insert with the socket having cross-sectional dimensions similar to but slightly greater than the cross-sectional dimensions of said spearhead to produce a snug fit therebetween, the spearhead being insertable through said elastomeric tubing and into said socket, thereby forming an airtight engagement between said spearhead, elastomeric tubing and socket, thereby holding said spearhead in said aperture by a suction engagement formed upon an attempted removal of said spearhead from said socket.

4,209,930

FISH ALERT

Greg Boynton, 1641 Camelot La., Minneapolis, Minn. 55432

Filed Jul. 27, 1978, Ser. No. 928,598
Int. Cl.[2] A01K *97/01*
U.S. Cl. 43—17 **11 Claims**



1. A portable fish alert signaling device for attaching to a fishing line to provide an alarm indication when a fish exerts a pull on the line, said signaling device comprising:

a. A substantially watertight housing;

b. A source of power disposed within said housing;

c. A fishing line engaging switch secured to the exterior of said housing, said switch comprising an electrically conducting surface affixed to the exterior surface of said housing and an electrically conducting finger-like resilient movable contact member overlying said conducting surface, said movable contact member overlying said conducting surface, said movable contact being normally urged into electrical contact with said conducting surface, said conducting surface and said movable contact being configured to accept therebetween a filament-like line to bring said surface and said movable contact out of electrical contact;

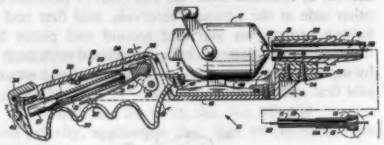
d. Indicating means positioned within said housing and connected in series with said source of power, said contact surface and said movable contact, said indicating means producing an alarm signal when said line is removed from between said surface and said movable contact, said indicating means comprising a visually sensible indicator disposed within said housing, and a selection switch mounted to said housing for selectably connecting either of said visually or audibly sensible indicators in said series connection, said switch having an actuating handle positioned exterior of said housing, said switch mounting a thin elongated printed circuit board interior of said housing, said board mounting said visually sensible indicator such that said visually sensible indicator is perceptible exterior to said housing.

4,209,931

EYELESS FISHING ROD EMPLOYING NOVEL HAND AND REEL GRIPPING MEANS

John E. Vance, 11030 N. 85th Pl., Scottsdale, Ariz. 85260

Filed Feb. 2, 1979, Ser. No. 9,113
Int. Cl.[2] A01K *87/06*
U.S. Cl. 43—22 **15 Claims**



1. A fishing rod comprising:

an elongated rod portion,

a holder portion,

a hollow elongated handle means comprising two hingedly mounted parts, and

means for securing one end of said rod portion to said holder portion,

said holder portion comprising clamping means along a portion thereof for securing at one end thereof a reel to said fishing rod and forming at the other free end thereof a first part of said handle means,

the second part of said handle means being hingedly connected to said first part and biased to move relative thereto when released from said first part,

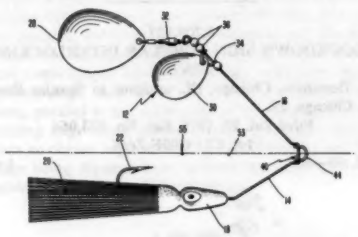
said second part cooperating with said holder portion to adjustably hold a reel in position on said holder portion in said clamping means when it is latched to said first part.

4,209,932

SPINNER BAIT FISHING LURE

Fred L. Pate, 3513 Talladega Hwy., Sylacauga, Ala. 35150

Filed Jun. 2, 1978, Ser. No. 911,757
Int. Cl.[2] A01K *85/00*
U.S. Cl. 43—42.11 **9 Claims**



1. In a fishing lure of the type including a pair of diverging arms, a hook connected to one of said arms, spinner means connected to the other of said arms and means for connection to a fishing line located near the intersection of said diverging arms, the improvement wherein:

said connection means includes rotatable means comprising a clevis for connecting a fishing line to said pair of arms, said rotatable means being freely rotatable a full 360° relative to said arms about an axis substantially perpendicular to the fishing line and further wherein said rotatable means is spatially fixed with respect to the lure to fix the point of attachment of the fishing line to the lure so that the fishing line defines a line which passes through the

center of mass of the lure and the hydrodynamic forces on either side of said defined line are balanced when the fishing line is pulled taut.

4,209,933

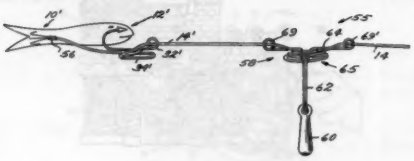
FISHING RIG ASSEMBLY

Joseph T. Manno, Star Rte., Kane, Pa. 16735

Continuation-in-part of Ser. No. 779,547, Mar. 21, 1977, Pat. No. 4,107,866. This application Aug. 14, 1978, Ser. No. 933,503

Int. Cl.² A01K *91/04*

U.S. Cl. 43—43.15 **9 Claims**



1. A fishing rig assembly comprising

a hook,

a first line,

means formed on said hook for operative connection of said first line thereto, an end of said first line connected to said means,

a sinker attachment means for operatively attaching a sinker to said first line for adjustment along said first line, said sinker attachment means consisting of an intergral body including a T-shaped projection; said generally T-shaped projection consisting of a first portion operatively connected to said body portion, a second, enlarged portion spaced from said body portion, and a third portion interconnecting said second enlarged portion to said body portion; first and second surface manifestations formed on either side of said generally T-shaped projection, and generally in-line with each other and said generally T-shaped projection, said surface manifestations and said projection being spaced a fixed predetermined distance apart,

a sinker,

a second line operatively connected to said sinker at one end thereof and looped at the other end thereof, said looped end disposed wrapped around said generally T-shaped projection, and

said first line received by said first and second surface manifestations, and wrapped around said generally T-shaped projection; and wherein said third portion of said generally T-shaped projection is relatively short compared to the thickness of said first and second lines, so th... said first line and said second line looped end will together be operatively tightly frictionally engaged by both said first and second portions when the lines are wrapped around said generally T-shaped projection.

4,209,934

MODULAR TOY BUILDING UNITS

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,253

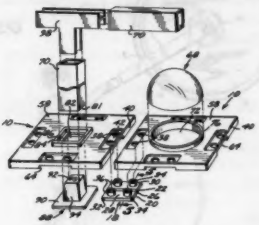
Int. Cl.² A63H *33/10*

U.S. Cl. 46—31 **19 Claims**

1. A modular mountable toy assembly comprising:

a plurality of panel members, each panel member having side edges and at least two apertures located substantially adjacent to each of at least two of its side edges,

and a plurality of connecting members, each connecting member having two portions and having two posts fixedly attached to each portion, the posts spatially forming a square configuration, the sides of the square configuration being equal in length to a distance between the two apertures adjacent to the side edges of the panel members, the two posts capable of being press fitted and removably held within the two apertures, each connecting member further including a thin flexible strip interconnecting the two portions and forming an axis of rotation therebetween, whereby a user has the option of interconnecting at least two panel members in a variable, angular configuration by press-fitting the pair of posts located on either portion of



the connecting member respectively into the apertures located in one panel member and another panel member, and also option of interconnecting at least two panel members in a relatively rigid, planar configuration by press-fitting two posts, one of each being located on the two different portions of the connecting member respectively into the apertures located in one panel member and another panel member.

4,209,935

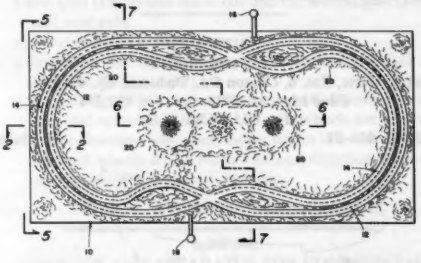
APPARATUS FOR ROCKET SLED GAME

Herman Parker, P.O. Box 1071, McAlester, Okla. 74501

Filed Jan. 23, 1978, Ser. No. 871,172

Int. Cl.² A63H *18/14, 29/10*

U.S. Cl. 46—44 **5 Claims**



1. An apparatus for a rocket sled game comprising:

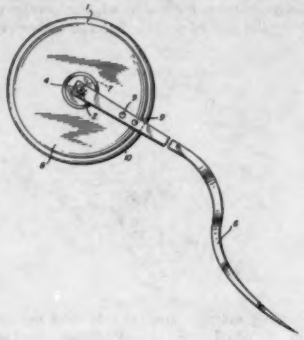
(a) a base compartment, at least one elongated substantially enclosed passageway in the interior of the base compartment, at least one elongated grooved track provided in the upper outside surface of the base compartment, each track being in communication with a separate passageway through a plurality of spaced bores along the upper surface of the passageway;

(b) a projectile sled adapted for slidably fitting in each said grooved track for travelling in a single direction along said track;

(c) each bore of said plurality of bores being inclined from the vertical, the upper ends of each bore being directed toward the direction of travel of said projectile sled; and

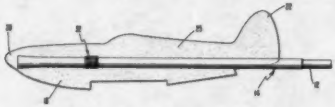
(d) separate means for selectively introducing a flow of air into one end of each passageway in a direction opposite to the direction of travel of the projectile, to thereby force each projectile sled along its grooved track by the flow of air passing from each passageway through the bores.

4,209,936
FLYING SAUCER APPENDAGE
Paul R. Sklar, 860 Fifth Ave., New York, N.Y. 10021
Filed Nov. 10, 1977, Ser. No. 850,478
Int. Cl.[2] A63H 27/00
U.S. Cl. 46—74 D 4 Claims



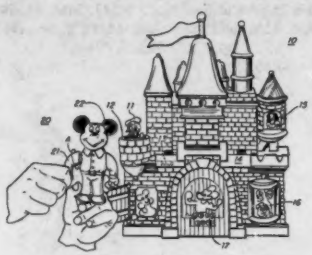
1. An aerial toy comprising a flying saucer disc, a flexible tail, and pivot means for attaching one end of said flexible tail to said disc at the central vertical axis to allow the disc to rotate about the axis relative to said one end of the flexible tail, such that when the flying saucer disc is rotating in flight the flexible tail trails the disc in the direction opposite to the direction of flight, said pivot means including a first aperture in said tail adjacent said one end and a connector receivable in said aperture, said tail having means for securing it in folded or rolled condition, said latter means including other apertures longitudinally spaced from said first aperture, said connector being receivable in said other apertures to secure the tail in folded or rolled condition.

4,209,937
TOY AIRCRAFT
Earl L. Witte, Rte. 6, Clinton Rd., Paducah, Ky. 42001
Filed Mar. 31, 1978, Ser. No. 892,254
Int. Cl.[2] A63H 27/14
U.S. Cl. 46—81 10 Claims



1. A toy aircraft adapted to be projected into flight by air pressure, comprising:
- a tubular support member having a front end and a rear end;
- a cover member adapted to be mounted on said tubular support member and shaped to form an aircraft body;
- means for sealing said front end of said tubular support member against air leakage;
- a blowpipe insertable into said rear end of said tubular support member for supplying air pressure to the interior thereof to propel the aircraft; and
- flexible gripping means formed on said tubular support member and spaced rearwardly from said front end thereof for engaging said blowpipe upon its insertion therein to provide an airtight seal and sliding resistance between said tubular support member and said blowpipe, said flexible gripping means comprises an annular section formed on said tubular support member projecting inwardly into the interior thereof for engagement with said blowpipe.

4,209,938
APPENDAGE OPERATED TOYS
Henry Orenstein, Verona, N.J., assignor to Toy Builders, Union, N.J.
Filed Jan. 6, 1978, Ser. No. 867,219
Int. Cl.[2] A63H 13/00
U.S. Cl. 46—116 10 Claims



1. A toy comprising a figure having a moveable appendage and an accessory activated by the figure;
- means with said figure responsive to the movement of said appendage for storing energy therein;
- means responsive to the energy storing means for applying energy at an extremity of said figure;
- said accessory being powered by a gear train which engages the energy applying means at an extremity of said figure; and
- said accessory being a reciprocable figure operated by a lever which is in turn operated by a strip that forms a cam element powered by said gear train.

4,209,939
DOLL USING CIRCULATING FLUID TO SIMULATE BODY TEMPERATURE
John Pittala, 214 Asharoken Ave., Northport, N.Y. 11768
Continuation-in-part of Ser. No. 725,831, Sep. 23, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 922,631
Int. Cl.[2] A63H 3/36
U.S. Cl. 46—116 8 Claims

1. A creature representation such as a doll, flexible figure toy, robot or the like comprising:
- a body having a trunk, head and limbs simulating an animate creature;
- said trunk having a surface structure comprising an outer skin, an inner supporting sheet structure spaced from said outer skin, and a plurality of studs serving as an intermediate layer between said outer skin and said inner sheet structure and bonded thereto; and
- said studs in said intermediate layer being constructed to form passageways in said intermediate layer between the studs, said trunk having an external, closable filler opening communicating with said passageways for admitting to

said trunk surface structure for circulation in said passageways a heated fluid to impart warmth to the outer skin.

4,209,940

TOY EJECTOR APPARATUS

Burton C. Meyer, Downers Grove; Leonid Kripak, Villa Park, and Fritz Fauser, Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 27, 1978, Ser. No. 873,016
Int. Cl.[2] A63H *13/16*
U.S. Cl. 46—145 17 Claims

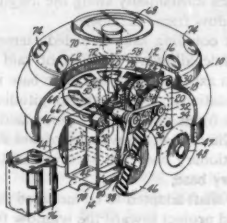
1. A toy apparatus, comprising:
a base structure having a pair of spaced apart, upstanding hollow bodies mounted thereon, each of said hollow bodies having an open end for receiving and containing a projectile;
a movable cover pivotally mounted to close the open end of said body, said covers being movable to an open position to permit said projectile to pass into and out of said body;
a projectile ejector for each of said bodies for propelling a projectile out of said open top, through the air toward the open top of another body; and
manually operable means interconnecting the projectile ejector for each body for sequentially actuating the projectile ejector in a timed sequence to propel said projectile back and forth therebetween.

4,209,941

GROUNDED FLYING SAUCER TOYS

Edmond A. Bourque, 24 Rose La., Cumberland, R.I. 02864

Filed Jul. 10, 1978, Ser. No. 923,143
Int. Cl.[2] A63H *33/26*
U.S. Cl. 46—230 6 Claims



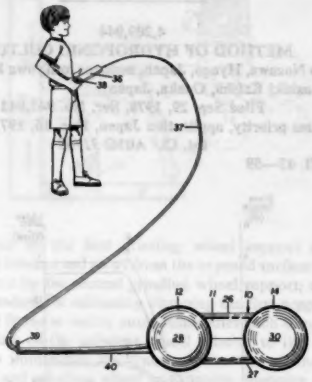
5. A toy simulating a grounded flying saucer comprising a prime mover, a set of wheels on which the toy is adapted to being propelled along a generally horizontal surface, at least one of the wheels being a driving wheel, a speed reducer interposed between the prime mover and the driving wheel, a vertical shaft also coupled to the prime mover, a dome covering the interior parts of the toy and rotated by the vertical shaft as the toy is propelled along the surface, a battery powering the prime mover, at least one electric lamp on the interior of the dome connected to the battery, a flasher switch interconnected between the battery and the lamp and a filter disc fitted with a plurality of different colored light transmitting filters, mounted on the vertical shaft and rotated thereby, the dome having at least one translucent window through which varicolored flashing light is emitted from the flashing lamp and through the filters.

4,209,942

REMOTE CONTROL CAR

Raymond J. Lohr, 5043 Sterrettania Rd., Erie, Pa. 16506

Filed May 30, 1978, Ser. No. 910,510
Int. Cl.[2] A63H *30/00*
U.S. Cl. 46—253 12 Claims



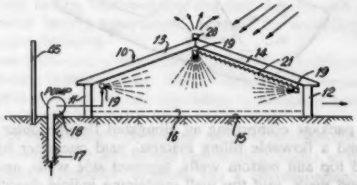
1. A car (10) having a body (11) and four wheels (12, 13, 14, 15),
a front axle (16) and a rear axle (17) supporting said wheels on said body,
a motor (18) on said body,
a first gear (19) on said front axle and the second gear (20) on said rear axle,
a sprocket (21) on said motor (18),
a first idler gear (22) connected between said sprocket (21) and said first gear (19),
a second idler (23) connected between said second gear (20) and said sprocket (21) whereby said wheels are driven in a first direction when said motor drives in a first direction and said wheels are driven in a second direction when said motor drives in a second direction.

4,209,943

PROCESS AND APPARATUS FOR COMMERCIAL FARMING OF MARINE AND FRESHWATER HYDROPHYTES

Henry W. Moeller, 45 St. Andrews Rd., Southampton, N.Y. 11968, and James P. Hunt, 200 Lexington Ave., Lyster Bay, N.Y. 11771

Filed Sep. 2, 1977, Ser. No. 830,163
Int. Cl.[2] A01G *31/02, 9/18*
U.S. Cl. 47—1.4 25 Claims



1. The method of cultivating freshwater and marine macro-

phytes of the type naturally growing in water comprising the steps of:

(a) providing a controlled atmospheric environment;

(b) exposing said environment to light sufficient to support growth of said macrophytes;

(c) placing live macrophytes in said environment in a position exposed to said light; and

(d) wetting said macrophytes with water of the type in which they naturally grow to maintain only a film of water on said macrophytes substantially throughout their growth period.

4,209,944

METHOD OF HYDROPONIC CULTURE

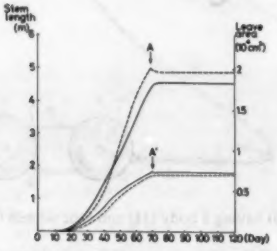
Shigeo Nozawa, Hyogo, Japan, assignor to Kyowa Kagakukogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 29, 1978, Ser. No. 947,842

Claims priority, application Japan, Dec. 16, 1977, 52-152231

Int. Cl.[2] A01G *31/02*

U.S. Cl. 47—59 **7 Claims**



1. A method of hydroponic culture in which plants are cultured while a nutrient solution is continuously circulated within a culture tank, said method being characterized by determining a scheduled growth curve for a plant to be cultured, programing the flow rate increase and liquid level drop of the nutrient solution by approximate correspondence with said scheduled growth curve, and supplying the nutrient solution under control in accordance with said program.

4,209,945

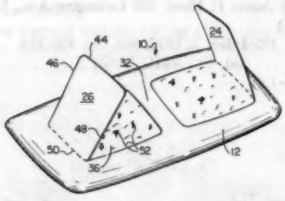
PLANT GROWTH PACKAGE

Enid-Mary Dent, London, England, and Arthur A. Anderson, New York, N.Y., assignors to Capability Brown Limited, New York, N.Y.

Continuation-in-part of Ser. No. 913,309, Jun. 7, 1978, abandoned. This application Sep. 11, 1978, Ser. No. 940,886

Int. Cl.[2] A01G *9/10*

U.S. Cl. 47—84 **12 Claims**



1. A package comprising an elongated flexible outer container and a flowable filling material, said container having opposed top and bottom walls, opposed side walls, and opposed end walls, said top wall containing indicia denoting a pair of cut-outs longitudinally spaced apart on either side of the transverse axis of said top wall, and spanning the major portion thereof, and an integral carrying handle positioned between said cut-outs and extending along said transverse axis, the material forming said cut-outs being adapted to be hinged open along one side thereof.

4,209,946

PIVOT MECHANISM FOR PIVOTED WINDOWS

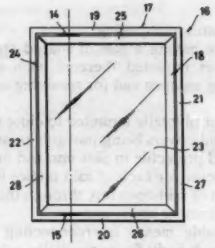
Tsutomu Akai, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,910

Claims priority, application Japan, Aug. 5, 1977, 52-105446[U]; Aug. 5, 1977, 52-105447[U]

Int. Cl.[2] E06B *3/40*

U.S. Cl. 49—390 **4 Claims**



1. A pivot mechanism for use between a window frame member and a window sash edge which is pivotally movable relatively to the window frame member, said pivot mechanism comprising:

(a) a stationary base adapted to be secured to the window frame member;

(b) a slide base slidably mounted on said stationary base for pivotal engagement with the window sash edge;

(c) a threaded element threadedly extending through one of said bases substantially along the longitudinal direction of the window frame member;

(d) means coupling said threaded element with the other base while allowing rotation of said threaded element about its axis, whereby said slide base is movable relative to said stationary base in the longitudinal direction of the window frame member by turning said threaded element;

(e) means limiting the movement of said slide base relative to said stationary base and securing said slide base to said stationary base;

(f) a pivot shaft adapted to be mounted on the window sash edge and project toward the window frame member, said slide base being movable into a position in which said stationary and slide bases jointly provide bearing means for the pivot shaft;

(g) said bearing means comprising a curved wall on said slide base defining a substantially semicircular recess receiving said pivot shaft, and a flat surface on said stationary base, said flat surface closing said semicircular recess when said slide base is in said position, whereby said pivot shaft can be retained in said recess;

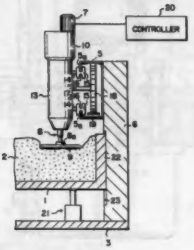
(h) said slide base including an elongated indentation extending in the direction in which the slide base is movable, said substantially semicircular recess opening toward said elongate indentation, and said flat surface on said stationary base being disposed in said elongate indentation.

4,209,947

GRINDING METHOD AND APPARATUS

Tetatsu Ohno, 1-2, 1-chome, Kasuya, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 813,978, Jul. 8, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 964,656
Claims priority, application Japan, Jul. 13, 1976, 51-83102
Int. Cl.[2] B24B *31/00*
U.S. Cl. 51—7 3 Claims



1. Grinding apparatus wherein a workpiece follows a path in a longitudinally shaped grinding tank defined by a guide rail positioned alongside the tank, comprising in combination, a working piece to be ground, a longidutinally shaped grinding tank having a path defined therein for moving said working piece along the grinding tank, a charge of grinding material located in said path for contact with said working piece, a guide rail provided alongside said grinding tank path, work control means movable along said guide rail for moving the workpiece along the path, a rotatable chuck movable with said control means having means securing the workpiece to its lower end, means for rotating the chuck and the workpiece as the workpiece is moved along the path in said grinding material, vertically moving means for relatively moving the chuck holding the workpiece vertically relative to the guide rail to contact the grinding material in the tank path operable while the workpiece is being rotated, a driving shaft and gear projecting from said chuck together with a rack on the guide rail meshing with said gear for moving the work control means along said rail, guide rail structure presenting a C-shaped cross-section alongside said chuck with a free edge at each cross-sectional end, and a pair of rollers with grooves therein each rotatably fitted to said chuck and rollably engaging with its respective groove a respective one of the free edges of the guide rail as the chuck moves about said path.

4,209,948

WORKPIECE CONDITIONING GRINDER SYSTEM

Robert F. Obear, Everett, Wash., assignor to Western Gear Corporation, Everett, Wash.

Division of Ser. No. 748,293, Dec. 7, 1976, Pat. No. 4,100,700. This application Jun. 27, 1977, Ser. No. 810,520
Int. Cl.[2] B24B *7/02*
U.S. Cl. 51—92 R 9 Claims

1. A high production grinding machine for conditioning an exposed surface of an elongated workpiece having a longitudinal axis and an exposed surface while limiting grinding wheel vibration during grinding contact with the workpiece, comprising:

a grinding station;

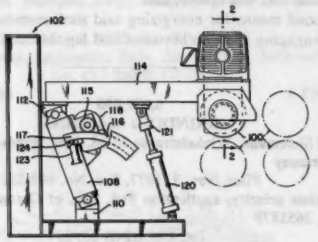
means for providing relative movement between the workpiece and grinding station along the longitudinal axis of the workpiece;

a stationary, structurally massive, rigid frame positioned at the grinding station;

a first grinding wheel support mounted at the grinding station and movable in a transverse direction generally perpendicular to the longitudinal axis of the workpiece and generally parallel to the exposed surface of the workpiece;

a second grinding wheel support carried by said first grinding wheel support, said second grinding wheel support being movable in a direction generally perpendicular to the exposed surface of the workpiece;

a powered rotary grinding wheel mounted on the second grinding wheel support such that said grinding wheel is transversely movable across the exposed surface of the workpiece by the first grinding wheel support and is movable toward and away from the exposed surface of the workpiece by the second grinding wheel support; and



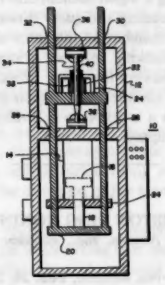
clamping means for releasably clamping the first support to the rigid frame at one or more points after each transverse positioning of the grinding wheel relative to the workpiece to immobilize the transverse motion of the first support and grinding wheel and thereby minimize grinding wheel vibration.

4,209,949

METHOD AND APPARATUS FOR HIGH PRECISION LAPPING MACHINES

Clyde Staats, Irwin, and John J. Pilewski, Greensburg, both of Pa., assignors to Staats & Staats, Inc., Irwin, Pa.

Filed Jan. 4, 1978, Ser. No. 866,850
Int. Cl.[2] B24B *37/02*
U.S. Cl. 51—151 10 Claims



1. A lapping machine comprising:

a frame having motive means attached thereto, said motive means having a pneumatic cylinder for accepting a gas under pressure;

means connected to said motive means for providing relative motion between a lap and a workpiece by imparting a motion to said lap corresponding to motion of said pneumatic cylinder;

means for sensing a pneumatic pressure representative of a pneumatic pressure in said pneumatic cylinder, so that said sensed penumatic pressure has a correspondence to a predetermined force between said lap and said workpiece;

said sensing means including means for stopping said motive

means upon the sensing of a predetermined pressure at a position corresponding to said predetermined force between said lap and said workpiece;

first means for energizing said motive means connected thereto provide a relative disengaging motion between said lap and sais workpiece, said disengaging motion have a substantially constant predetermined amplitude from said position of said predetermined pneumatic pressure corresponding to a predetermined force between said lap and said workpiece; and

second means for energizing said motive means toward an engaging position between said lap and said workpiece.

4,209,950

GRINDING MACHINE

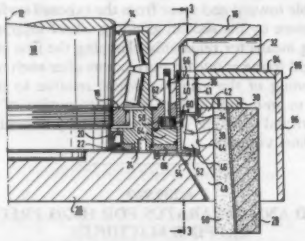
Hans Sielemann, Winkelstrasse 32-34, 4980 Bünde, Fed. Rep. of Germany

Filed Nov. 7, 1977, Ser. No. 849,332

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651879

Int. Cl.² B24B *55/02*

U.S. Cl. 51—267 **23 Claims**



1. A grinding machine having a rotatable grinding head comprising a plurality of grinding segments arranged in a generally circular alignment around the periphery of the grinding head, said grinding head having an annular chamber therein for receiving a liquid coolant and having a plurality of water channels extending obliquely downward and outward from said annular chamber to the inner side of the grinding segments; and a blocking member comprising at least one barrier diaphragm having the shape of a circular segment for covering the water channels in a region of the grinding head not in contact with a workpiece whereby coolant flow into said region is interrupted.

4,209,951

PISTON RING HONING

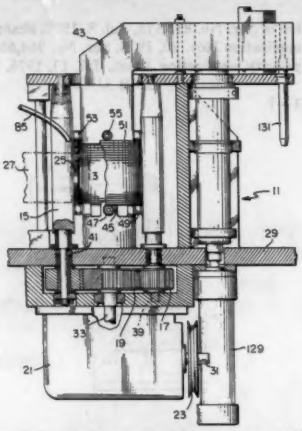
Robert H. Gillette, Angola, Ind., assignor to Brammall, Inc., Angola, Ind.

Division of Ser. No. 880,810, Feb. 24, 1978, which is a continuation of Ser. No. 741,501, Nov. 12, 1976, abandoned. This application Mar. 20, 1978, Ser. No. 888,340

Int. Cl.² B24B *1/00*

U.S. Cl. 51—290 **2 Claims**

1. The method of finishing a plurality of piston ring faces comprising the steps of, supporting a plurality of stacked piston rings so that they have a common center axis by engaging their outer surfaces with a plurality of rollers mounted parallel to the center axis and equally spaced about the outer surfaces of said piston rings, driving at least one of said plurality of rollers so as to rotate said piston rings, engaging the outer surfaces of said piston rings with a first tool between two of said plurality of rollers and moving said first tool parallel to said center axis to hone the outer surfaces of said rings, and engaging the outer surfaces of said piston rings with a second tool on the sides opposite to the sides engaged by said first tool and moving said



second tool parallel to said center axis to hone the outer surfaces of said rings.

4,209,952

UNDERWATER JET BLASTING APPARATUS

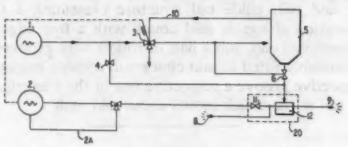
David J. H. Odds, Horley, England, assignor to F. A. Hughes and Company Limited, Epsom, England

Filed Sep. 8, 1978, Ser. No. 940,666

Claims priority, application United Kingdom, Sep. 12, 1977, 37975/77

Int. Cl.² B24C *7/00, 5/02*

U.S. Cl. 51—415 **4 Claims**



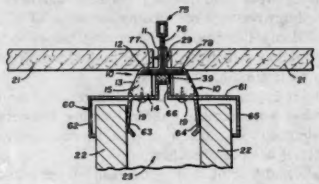
1. Apparatus for use in high pressure underwater abrasive-laden water jetting, such apparatus comprising in combination a gun; a jetting nozzle, an abrasive inductor, and a water valve in said gun; a high pressure water pump to which said gun is connected, said pump being pressurised on opening of said water valve; an air pump; a container for abrasive connected via an air control valve to said air pump to be pressurised thereby; an air line between said container and said abrasive inductor on said gun at which, in use, abrasive and air are mixed with water; an air by-pass to connect said air line with said air pump; means connecting said air control valve to said water pump whereby said air control valve is responsive to pressure conditions at said water pump to direct air from said air pump to said container, and thus to supply abrasive-laden air to said inductor, when said water valve is open and said water pump is pressurised; said air control valve being adapted to direct air from said air pump along the by-pass in response to the water valve being closed and said water pump being depressurised.

4,209,953

CEILING RUNNER ATTACHMENT SYSTEM AND CLIP THEREFOR

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 824,756, Aug. 15, 1977, Pat. No. 4,154,035.
This application Apr. 9, 1979, Ser. No. 28,031
Int. Cl.[2] E04B 2/76
U.S. Cl. 52—241 13 Claims



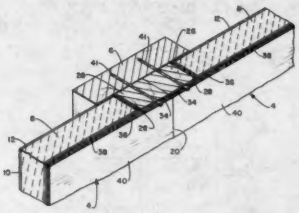
1. A ceiling runner system comprising:
an inverted-T runner ceiling grid;
a plurality of attachment clips secured to the web of an inverted-T runner by fastener means and supportingly engaged by the arms of the inverted-T runners;
at least one ceiling panel having an edge supportingly resting upon the arm of an inverted-T runner;
at least one ceiling runner located either parallel or perpendicular to an inverted-T runner comprising a top plate and depending flange members wherein the top plate is attached by fastening means to at least one attachment clip;
at least one wall panel having a top edge engaged to a flange member of the ceiling runner.

4,209,954

PANEL CONSTRUCTION HAVING LATERAL EDGE MEMBERS

Lloyd J. Scheid, 4404 Grimes Pl., Encino, Calif. 91316

Filed Dec. 5, 1977, Ser. No. 857,126
Int. Cl.[2] E04C 2/04
U.S. Cl. 52—601 1 Claim



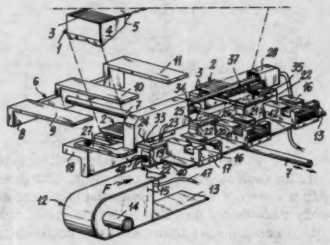
1. A panel construction for interior walls comprising a gypsum core having opposed lateral edges intended for about vertical disposition to form a portion of an interior wall, said core member having opposed planar surfaces, one of said surfaces being adapted to be aesthetically and exteriorly finished, the other being unfinished; an elongate, wood, edge member secured in adjacent relationship to each of the opposed lateral edges with a hot melt adhesive layer and extending about the extent thereof and having one surface having about planar continuity with said unfinished surface, the other surface being planar and angularly flaring outwardly and exteriorly of the plane of said surface adapted to be aesthetically and exteriorly finished, said member being of sufficient width to accommodate securement means therethrough; and a layer of filler extending from the edge of said elongate edge member and feathered to fill in and provide continuity between said one of said surfaces adapted to be aesthetically and exteriorly finished and said other surface facing outwardly and exteriorly of said elongate edge member, said surfaces and lateral edges of said gypsum core member having a paper covering thereon.

4,209,955

DEVICE FOR FEEDING AND CHECKING LAYERS OF CIGARETTES IN CIGARETTE PACKAGING MACHINES

Enzo Seragnoli, Bologna, Italy, assignor to G.D Societa per Aziconhi, Bologna, Italy

Filed May 8, 1979, Ser. No. 36,982
Claims priority, application Italy, Jan. 6, 1978, 3459 A/78
Int. Cl.[2] B65B 57/14
U.S. Cl. 53—54 5 Claims

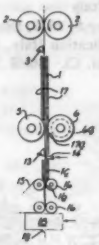


1. A device to be associated to a cigarette packaging machine for forming bundles constituted by a plurality of superimposed individual layers of adjacent cigarettes and for checking the faultless conditions of said individual layers during the formation of said bundles comprising:
a hopper having discharging ports for forming and dispensing said individual layers;
side-by-side disposed stations each for successively receiving a layer from the respective discharging port;
compartments for containing said bundles mounted on means intermittently moving traversely to and in front of said stations;
means disposed between each of said stations and said compartments for supporting and guiding said individual layers, said means delimiting a passage formed by side guiding members and by an upper and a lower light-transparent guiding plate and having a width substantially equal to the width of a layer and a height substantially equal to the diameter of a cigarette;
a first fixed screen means external to said passage associated to and disposed above said upper light-transparent guiding plate, said first screen means being in the form of a slot developing in the direction of the transverse dimension of said passage;
a pusher means reciprocatingly moving in line with the cigarette axes for transferring said individual layers from said stations, through said passages into said compartments;
a light source disposed above said slot;
a mounting external to said passage on the side thereof opposite said light source associated to and disposed below said lower light transparent guiding plate and having a number of built-in seats each housing a photosensitive element, each aligned with a cigarette of a layer and all facing said slot;
a second fixed screen means each associated to each of said seats, said second screen means being in a tubular form with axis directed perpendicularly towards said slot;
ejection means for ejecting bundles containing defective layers; and
cyclic means associated with said photosensitive elements for controlling said ejection means.

4,209,956
FORMING OVERLAPPED WRAPPERS

Arthur J. Clayson, and Austin L. Fox, both of London, England, assignors to Molins Limited, London, England

Filed Jun. 13, 1978, Ser. No. 915,092
Claims priority, application United Kingdom, Jun. 21, 1977, 25974/77
Int. Cl.² B65B 41/16
U.S. Cl. 53—396 13 Claims

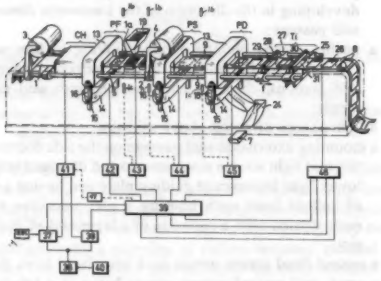


1. A method of forming pairs of overlapped wrappers for wrapping articles such as groups of cigarettes, comprising the steps of feeding a web of wrapping material at a constant feed speed towards a conveyor movable at a first speed, said constant feed speed being higher than said first speed, cutting the web upstream of the conveyor at intervals corresponding to the length of the first wrapper of said pair, so that the newly cut end of the web overtakes the trailing end of the cut piece and forms an overlap therewith, and making a further cut in said web downstream of the conveyor at a desired position behind said overlap to cut a second wrapper of said pair to thereby form a pair of overlapped wrappers, said conveyor conveying said first wrapper only during the period between the cutting of the web upstream of the conveyor and the newly cut end of the web reaching said conveyor.

4,209,957
ARRANGEMENT AND PROCESS FOR ACTIVATING AND ARRESTING THE OPERATION OF A HEAT-FORMING MACHINE

René Utzmann, Falaise, France, assignor to Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanique S.A., Falaise, France

Filed Oct. 10, 1978, Ser. No. 949,579
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745422
Int. Cl.² B65B 1/02, 3/02, 5/02
U.S. Cl. 53—453 16 Claims



1. An improved process for actuating and arresting a heat-forming machine for producing deep drawn containers made of thermoplastic foil band material, wherein said foil band material is paid out in stepwise fashion from at least one storage roller operatively mounted in the heat-forming machine, and is guidingly fed in stepwise fashion in a feeding direction successively along a processing path along which there are disposed a heating arrangement, a molding arrangement, a filling arrangement, a cover foil band sealing arrangement and a stamping arrangement, said heat-forming machine include heating elements operatively mounted above and below said processing path, and further including screening plates slidably movably mounted along a path parallel to said processing path and disposed between said heating element and said processing path; the improvement comprising the steps of

first slidably moving said screening plates in a stepwise fashion in a direction opposite to the feeding direction out of said heating arrangement;

thereafter exposing said foil band material to heating in said heating arrangement until a forming temperature for a predetermined portion of the thermoplastic foil band material has been reached;

thereafter advancing said predetermined portion of foil band material into said molding arrangement;

thereafter actuating said molding arrangement; and continuing the aforerecited steps until said heat-forming machine is to be selectively arrested, whereupon

first said slidably moving screening plates are moved in the same direction as the feeding direction into said heating arrangement;

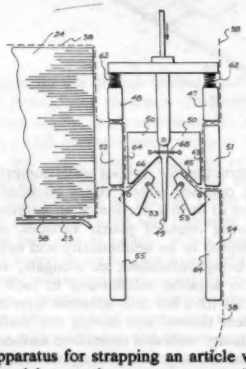
thereafter arresting said molding arrangement; and

thereafter arresting said feeding of said foil band material; slidably moving said screening plates in and out of said heating arrangement by at least two steps, the length of said steps corresponding to the length of the steps of said feeding of said foil band material; and adjusting the time during which said screening plates remain stationary so that a portion of the foil band material which is most proximate to the molding arrangement is selectively heated to the required forming temperature.

4,209,958
ARTICLE STRAPPING

Peter E. Bailey, 6, Broadwater Dr., Saratoga, New South Wales, Australia

Filed Sep. 26, 1978, Ser. No. 946,001
Claims priority, application Australia, Oct. 10, 1977, 1997/77
Int. Cl.² B65B 9/02, 11/08
U.S. Cl. 53—553 10 Claims



1. An apparatus for strapping an article with heat sealable plastics material strap, the apparatus comprising:

(a) spaced-apart first and second strap stations arranged to support opposite ends of the strap, one at least of said stations being a strap feed station,

(b) support means for receiving and supporting the article to

be strapped and disposed such that, in operation of the apparatus, the strap embraces a portion of the periphery of the article when supported upon the support means with first and second limbs of the strap extending toward the first and second stations respectively, and

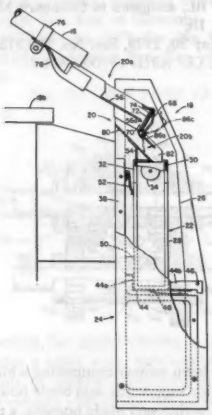
(c) first and second heads and means for driving said heads toward and away from one another, the first head comprising spaced-apart clamp elements, heater bars located between the clamp elements and a severing means located intermediate the heater bars, means for driving the heater bars and the severing means in a direction parallel to the direction of movement of the first head and relative to the clamp elements, the second head also comprising a plurality of clamp elements including a first set of spaced-apart clamp elements which are arrayed with the clamp elements of the first head and which are co-operable with the clamp elements of the first head to clamp the first limb of the strap at spaced apart zones, and a second set of spaced apart clamp elements which are arrayed and cooperable with the first set of clamp elements of said second head to clamp the second limb of the strap at spaced-apart zones, the severing means being actuable in operation of the apparatus to sever both the first and the second limbs of the strap at a region between said spaced-apart zones, and the second head further comprising means for displacing end portions of the second limb when severed into contact with the heater bars and thereafter into overlapping heat sealing contact with corresponding end portions of the severed first limb.

4,209,959

MAGNETIC STORAGE SYSTEM AND METHOD FOR AN AXIAL LEAD SORTER

Walter S. Bachman, Acton, and Nicholas J. Cedrone, Wellesley Hills, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.

Filed Jun. 1, 1978, Ser. No. 911,694
Int. Cl.² B65B *19/34*
U.S. Cl. 53—475 **14 Claims**



1. A system for storing in a cassette electronic devices with magnetically permeable axial leads comprising, in combination,

chute means that receives said devices advancing in an axial mode,

means for replaceably holding said cassette generally below said chute means and adapted to receive and store said devices in a horizontal orientation, and

magnet means for producing a magnetic field extending across said cassette and said chute means in a generally horizontal direction and increasing in intensity in a vertically downward direction,

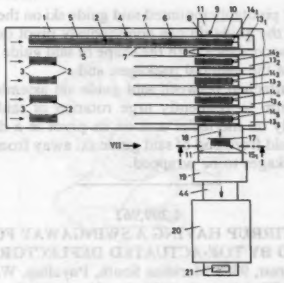
said chute means being structured to produce, in combination with said magnetic field, a controlled reorientation of said devices from said axial mode of advance to a lateral mode of advance.

4,209,960

APPARATUS FOR MAINTAINING CONSTANT THE WEIGHT OF ARTICLE STACKS

Gert Deutschländer; August Rebsamen, both of Neuhausen am Rheinfall, and René Fluck, Schleitheim, all of Switzerland, assignors to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Nov. 16, 1978, Ser. No. 961,255
Claims priority, application Switzerland, Aug. 22, 1978, 8873/78
Int. Cl.² B65B *57/00, 57/20*
U.S. Cl. 53—502 **11 Claims**



1. In an article packing system including a first conveyor means for advancing a series of flat articles; at least two stack-forming devices for consecutively forming stacks of variable length from the articles received from the first conveyor means; a second conveyor means extending from the stack-forming devices for carrying away the stacks formed in the stack-forming devices; a packing machine for packaging the article stacks received from the second conveyor means and a scale for weighing the stacks of articles; the improvement wherein said scale is in the conveying path of said second conveyor means and is located downstream of said stack-forming devices and upstream of said packing machine as viewed in the direction of article advance on said second conveyor means; said second conveyor means including a mechanism for successively advancing the article stacks from said stack-forming devices towards said scale in a direction parallel to the plane of the flat articles and sequentially introducing the article stacks into said scale and subsequently advancing them from said scale to said packing machine; further comprising means operatively connecting said scale with said stack-forming devices for varying the length of the stacks in said stack-forming devices as a function of the stack weight measured by said scale.

4,209,961

GUIDE MECHANISM FOR SELF-GUIDING STRETCH-WRAP MACHINE

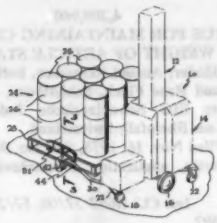
James R. Donnelley, Los Angeles, Calif., assignor to Stevenson Industries, Northridge, Calif.

Filed Oct. 11, 1978, Ser. No. 950,601
Int. Cl.² B65B *13/10*
U.S. Cl. 53—588 **18 Claims**

1. A guide ski assembly for attachment to the feeler arm of a self-guiding stretch-wrap machine for guiding the stretch-wrap machine around material packages so that stretch-wrap

material can be wrapped around the material packages to bind them into a material unit, said guide ski assembly comprising:

a curved guide ski for contact with material packages, said guide ski having a front end and being curved to simultaneously engage a plurality of said packages to avoid engagement of said front end of said guide ski in spaces between material packages to be wrapped;



means for pivotably mounted said guide ski on the feeler arm so that the guide ski can continuously pivot on the feeler arm in accordance with the shape of said guide ski and the shape of the material packages; and

a spring attached between said guide ski assembly and the feeler arm to resiliently urge rotation of said guide ski assembly on the feeler arm on its pivot in a direction to move said front end of said guide ski away from the material packages to be wrapped.

4,209,962

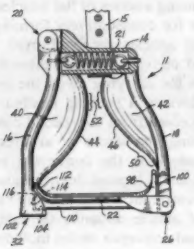
SAFETY STIRRUP HAVING A SWINGAWAY FOOTREST RELEASED BY TOE-ACTUATED DEFLECTOR PLATES

Roger C. Forest, 9880 Meridian South, Puyallup, Wash. 98371

Filed Sep. 18, 1978, Ser. No. 943,115

Int. Cl.[2] B68C *3/02*

U.S. Cl. 54—49 **11 Claims**



7. In a safety stirrup of the type having an upper, strap supported hanger means, and a pair of laterally spaced apart side bars depending downwardly from said hanger means in which at least a first of said side bars is swingably connected to said hanger means for lateral and outward swinging movement of a lower end of said first side bar relative to said second side bar, and a releasable footrest bar normally bridging the lower ends of said side bars and having a first end pivotally connected for swinging downwardly and away to the lower end of one of said side bars so that the second end of the footrest bar is released from the lower end of the other of said side bars when the lower end of said first side bar is swung laterally and outwardly relative to said second side bar, the improvement comprising first and second deflector plates supportively and fixedly attached along said first and second side bars respectively, said deflector plates projecting inwardly and forwardly from said side bars and being oppositely contoured in a forwardly and upwardly convergent configuration so as to react to excessive upward tilting and/or sideways turning of the forward part of a rider's boot and deflect said first side bar laterally and outwardly relative to said second side bar thereby releasing said footrest bar to swing downwardly and away releasing the rider's boot.

4,209,963

SELF-PROPELLED SWATHER

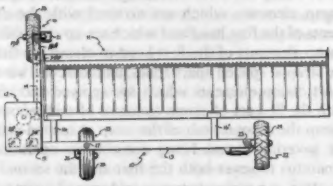
Orville Linn, Box 188,, Lang, Saskatchewan, Canada

Continuation-in-part of Ser. No. 830,693, Sep. 6, 1977, abandoned. This application Jan. 22, 1979, Ser. No. 5,601

Claims priority, application Canada, Sep. 10, 1976, 260985

Int. Cl.[2] A01D *41/02, 57/00*

U.S. Cl. 56—10.8 **25 Claims**



1. A self-propelled swather comprising in combination a transverse main frame, a swather unit operatively mounted and supported within said main frame, a front drive wheel assembly on one end of said main frame, a rear drive wheel assembly adjacent the other end of said main frame, a castoring support wheel assembly on said main frame situated between said front and rear drive wheel assemblies, as hydraulic motor operatively connected to each of said drive wheel assemblies and means on said swather operatively connected to said front drive wheel assembly to steer said front drive wheel assembly.

4,209,964

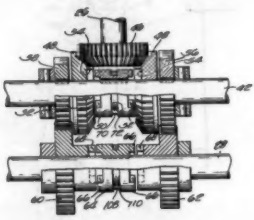
TWO-SPEED FORWARD AND REVERSE SELF-PROPEL SYSTEM FOR WALK-BEHIND MOWERS

William Fuelling, Jr., Galesburg, and Richard A. Heismann, Knoxville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 30, 1978, Ser. No. 910,573

Int. Cl.[2] A01D *69/06, 69/08*

U.S. Cl. 56—11.2 **21 Claims**



1. A self-propelled lawn mower comprising a blade housing, a plurality of wheels for supporting said blade housing, a blade mounted for rotation within said blade housing, a prime mover supported on said housing, a drive shaft mounted for rotation relative to said housing and adapted for connection to one of said wheels for driving thereof, transmission means mounted on said housing and including a rotatable input shaft drivingly connected to said prime mover, a pair of gears mounted co-axially with said drive shaft, means for connecting said input shaft to said pair of gears so as to drive one of said gears at a first speed and so as to drive the other gear at a second speed, and means for alternatively and selectively connecting said gears to said drive shaft for driving said drive shaft, said means includ-

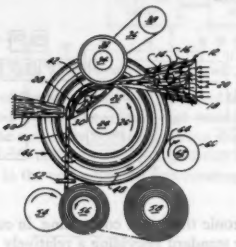
ing a shiftable element drivingly mounted on said drive shaft between said pair of gears and selectively and alternatively connectable to said gears.

4,209,965

UNIVERSAL SPINNING SYSTEM

Emilian Bobkowicz, 400 Kensington, Westmount, Quebec, Canada

Continuation of Ser. No. 752,901, Dec. 21, 1976, abandoned. This application May 3, 1978, Ser. No. 902,385
Int. Cl.[2] D01H *1/12, 13/30;* D02G *3/40*
U.S. Cl. 57—5 19 Claims



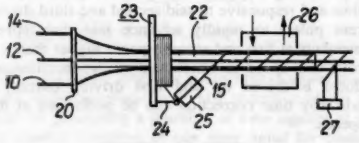
1. A method suitable for manufacturing a yarn product comprising the steps of supplying first fibers, aerodynamically forcing said fibers to assume a vortex configuration to thereby impart a pre-twist to said first fibers to form a strand, passing said strand between first and second pinch points and while said strand is between said first and second pinch points, juxtaposing second fibers with said strand to form a yarn product.

4,209,966

TERMINABLE COMMUNICATION CABLE WITH CONDUCTOR PAIRS COMBINED IN GROUPS

Norbert Sutor, Neustadt, and Dieter Vogelsberg, Coburg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1978, Ser. No. 942,317
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1977, 2742368
Int. Cl.[2] H01B *13/02, 13/26*
U.S. Cl. 57—6 5 Claims



1. The method for manufacturing a communication cable which includes a cable core, surrounded by a cable sheath, which consists of several conductor groups which in turn consists of several twisted conductor pairs, the conductor pairs of each conductor group connected to each other by means of flexible holding elements arranged at regular intervals transversely to the longitudinal direction of the conductors and form a flat cable comprising:

(a) first arranging the conductor pairs temporarily along the generatrix of a cylinder;

(b) temporarily fixing said pairs in this configuration by means of a holding helix by securing the holding helix to the surface of the conductor pairs;

(c) subsequently cutting open the holding helix between two conductor pairs associated with adjacent generatrices in the same operation;

(d) removing the several conductor pairs from this configuration to obtain a flat cable in which the conductor pairs have crosswise connection to each other by means of the cut opened holding helix; and

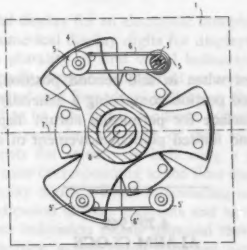
(e) combining the conductor pairs in the flat cable into a conductor group.

4,209,967

RESILIENT COUPLING DEVICE FOR TEXTILE TWISTING APPARATUS

Jean P. Guerton, Maisons Alfort; Jean Waleckx, Villebon sur Yvette, and Jean M. Monville, Paris, all of France, assignors to SKF Compagnie d'Applications Mechaniques, Clamart, France

Continuation-in-part of Ser. No. 882,513, Mar. 1, 1978, Pat. No. 4,158,282. This application Apr. 2, 1979, Ser. No. 26,630
Claims priority, application France, Apr. 18, 1978, 78 11424
Int. Cl.[2] D01H *7/86*
U.S. Cl. 57—58.72 10 Claims



1. A resilient coupling device for a double-twist twisting mechanism, comprising, a centered assembly rotatable about a first axis and an off-centered assembly which rotates about a second axis which is adjacent to but not concentric with the first axis, each of said assemblies having at least two fastening means spaced from their respective axes, and a pair of oppositely-acting connecting means which each connect a fastening means on one assembly with a fastening means on the other assembly whereby rotation of one assembly will produce rotation of the other assembly, each connecting means including a substantially unstretchable flexible traction element and a compressibly deformable resilient element located between the traction element and a said fastening means.

4,209,968

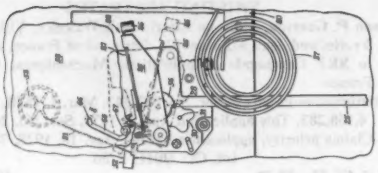
CLOCK CHIME WITH SHUTOFF

Dionizas V. Remys, Clarendon Hills, and Donald R. Scott, Lombard, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 1, 1977, Ser. No. 812,219
Int. Cl.[2] G04B *21/10*
U.S. Cl. 368—273 3 Claims

1. In a clock having a movement and chime sounding mechanism including a chime and a hammer assembly mounted for pivotal chime striking movement, said hammer assembly including a pivotal lever arm for supporting a chime clapper, said movement and mechanism being contained in a housing having a removable cover member for providing access to said movement and mechanism, the improvement consisting of a chime shutoff means comprising a pin carried on said cover member for preselected movement between first and second positions, said lever arm including a follower portion, a rotating wheel driven by said movement and positioned to be engaged by said follower portion, means biasing said lever arm into engagement with said wheel, said pin permitting said

follower portion of said lever arm to be biased into generally continuous slideable engagement with said rotating wheel when in said first position and preventing pivotal movement of said hammer assembly by supporting said lever arm against



said engagement when in said second position, said wheel having a notched portion comprising a generally radially extending drop surface for permitting abrupt displacement of said follower and limited pivotal movement of said hammer assembly.

4,209,969

ALARM CLOCK

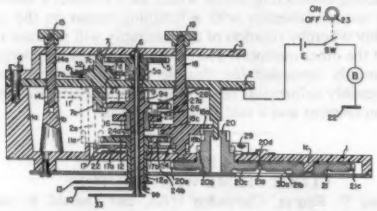
Kiyoshi Kitai; Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1978, Ser. No. 877,824

Claims priority, application Japan, Mar. 25, 1977, 52-33583; Mar. 25, 1977, 52-33584; Mar. 25, 1977, 52-36850[U]

Int. Cl.[2] G04C *21/16, 21/00*

U.S. Cl. 368—250 **8 Claims**



1. In a timepiece having a case, an alarm signaling device for generating an alarm by detecting the phase of two sets of gears and at least a minute hand and an hour hand for indicating the time at which the alarm signaling device is effected to generate the alarm, the improvement wherein the two sets of gears are concentrically mounted for rotation and one set of gears comprises an hour hand gear and an hour detecting gear and the other set comprises a minute hand gear and a minute detecting gear positioned between the minute gear and the one set of gears and having means in sliding contact with the minute gear, and further comprising an alarm signaling time setting device comprising an alarm signaling time setting wheel having an axis of rotation parallel to that of the two sets of gears and a first gear and a second gear engaging with said minute detecting gear and said hour detecting gear respectively.

4,209,970

ELECTRONIC TIMEPIECE

Kazunari Kume; Minoru Watanabe, both of Tokorozawa; Hideshi Oono, Sayama, and Munetaka Tamaru, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

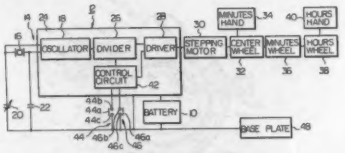
Division of Ser. No. 661,577, Feb. 26, 1976, Pat. No. 4,092,820. This application Apr. 3, 1978, Ser. No. 892,812

Claims priority, application Japan, Mar. 25, 1975, 50-035795; May 30, 1975, 50-064172

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.[2] G04C *3/00, 13/06;* G04B *27/00*

U.S. Cl. 368—76 **1 Claim**



1. An electronic timepiece comprising, in combination:

a frequency standard providing a relatively high frequency signal;

a frequency converter dividing down the relatively high frequency signal to provide a first low frequency signal, a second low frequency signal lower in frequency than said first low frequency signal, and a third low frequency signal lower in frequency than said second low frequency signal;

manually operable switch means;

a control circuit including first means for generating first and second outputs when said manually operable switch means is actuated, second means responsive to said first output for generating a first output signal, and third means for generating a second output signal in response to said second output;

a driver circuit normally providing first driving current pulses in response to said third low frequency signal and responsive to said first and second output signals from said control circuit to provide second and third driving current pulses at frequencies higher than said first driving current pulses; and

an electro-mechanical transducer normally driven by said first driving current pulses to advance rotatable time-representing members stepwise once per every one unit time and responsive to said second and third driving current pulses to rapidly advance said time-representing members at first and second speeds higher than a normal rotational speed in which said electro-mechanical transducer is driven by said first driving current pulses, whereby time correction can be performed at different speeds.

4,209,971

ELECTRONIC TIMEPIECE

Makoto Ueda; Masaharu Shida, and Akira Torisawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Apr. 20, 1978, Ser. No. 898,535

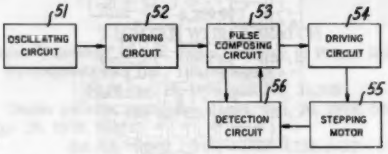
Claims priority, application Japan, Apr. 23, 1977, 52-47093

Int. Cl.[2] G04C *3/00*

U.S. Cl. 368—76 **4 Claims**

1. An electronic timepiece comprising: a stepping motor having a rotor and a coil; a detection circuit having a resistance element for discriminating between rotation and non-rotation of the stepping motor by variation of the coil inductance; a dividing circuit receptive of a time base signal for dividing the same down; a pulse composing circuit for generating a normal

driving pulse for the stepping motor sufficient to drive the same under normal loading and insufficient to drive the same under worst case loading, a correction driving pulse sufficient to drive the motor under worst case loading and a detection pulse applied to said detection circuit; a stepping motor driving



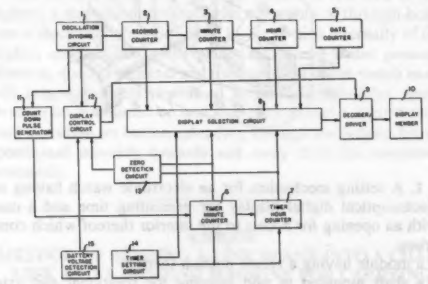
circuit receptive of the normal driving pulse and the correction driving pulse; and means connecting said resistance element directly across the coil output of the stepping motor such that said detection circuit controls the driving circuit to supply the correction pulse to the coil when the non-rotating condition is detected.

4,209,972

DIGITAL ELECTRONIC TIMEPIECE HAVING AN ALARM DISPLAY

Takuro Fukuichi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 14, 1978, Ser. No. 915,178
Claims priority, application Japan, Jun. 17, 1977, 52-72576
Int. Cl.[2] G04F *10/00*; G04C *19/02*
U.S. Cl. 368—71 **4 Claims**



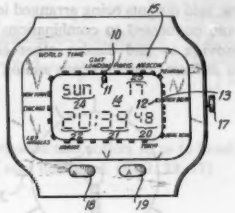
1. A digital electronic timepiece comprising: a power source; a time base signal generator; a divider receptive of the time base signal for generating a plurality of time signals; at least one time counter receptive of one time signal for counting time; at least one settable timer counter for storing a count corresponding to a desired time period and receptive of a time signal for decrementing the count thereof to zero; a multi-digit digital display for displaying the time count in the counter; means for generating a zero count signal when the timer count is zero; means for generating a plurality of display driving signals each corresponding to one digit of the display, wherein the display driving signals of successive digits are phase delayed with respect to each other and the frequency thereof is sufficiently low to produce visible flickering of the display; and means for normally applying a given time signal to the display to produce a non-flickering time display and responsive to a zero count signal in the timer counter for applying the display driving signals to the display to produce a sequential flickering of the digits of the time display to provide a visual indication of the lapse of said desired time period.

4,209,973

ELECTRONIC TIMEPIECE TIME ZONE DISPLAY

Shuzi Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 31, 1977, Ser. No. 829,545
Claims priority, application Japan, Sep. 1, 1976, 51-104685
Int. Cl.[2] G04B *19/30*
U.S. Cl. 368—84 **13 Claims**



1. In a digital display for an electronic timepiece including a plurality of numerical display digits for displaying time information and a plurality of first visual indication display segments peripherally disposed about said numerical display digits, at least one of said first visual indication display segments being adapted to be selectively rendered visually distinguishable from the remaining plurality of first visual indication display segments for selectively indicating a predetermined integral time zone corresponding to the time displayed by said numerical display digits, a bezel surrounding said plurality of first visual indication display segments and having a plurality of first distinct indication means disposed therearound, each said first indication means being disposed proximate to the position of a first visual indication display segment for identifying the predetermined integral time zones selectively indicated by the first visual indication display segments being rendered visually distinguishable, the improvement comprising at least one second indication means disposed on said bezel, each said second indication means being positioned intermediate a pair of said first indication means, and at least one second visual indication display segment disposed proximate to said second indication means for being selectively rendered visually distinguishable with respect to each of said first visual indication display segments for discriminating between a predetermined integral time zone indicated by said at least one of said first visual indication display segments that is rendered visually distinguishable from the remaining plurality of first visual indication display segments and a further time zone indicated by the second visual indication display segments being rendered visually distinguishable and second indication means that is non-integrally related to the time zones indicated by the first visual indication display segments.

4,209,974

ELECTRONIC TIMEPIECE CIRCUITS

Robert T. Noble, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 13, 1978, Ser. No. 877,192
Int. Cl.[2] G04B *19/30, 19/07*
U.S. Cl. 368—84 **12 Claims**

1. In combination, an electro-optic display having a first layer of display elements disposed in configuration radiating from near the central point of the display and defining radial bars, a second layer of elements disposed in cooperative relationship with said first layer, said second layer of elements being disposed in a plurality of annular concentric groups operatively associated with said radial bars, a first plurality of individually separate electrical paths interconnecting said elements of said first layer into predetermined serially connected groups, each group containing at least two of said radial bars, a second plurality of electrical conductors separately

connected to the elements of said second layer and providing means for individually applying electrical potentials thereto, electronic circuitry for driving said display elements comprising a source of electrical signals having predetermined repetition rates, countdown means connected to said source for producing a first plurality of electrical signals varying with time at predetermined rates and representing seconds, minutes and hours, decoding means having a plurality of outputs lesser in number than the number of electrical quantities representing the state of time, said outputs being arranged in predetermined matrix order and connected to combinations of said display elements to provide to said display other electrical signals representing in different combinations analog representations

of time, a plurality of conductors interconnecting said countdown means with said decoding means thereby to conduct said first plurality of electrical signals in time shared sequences, and control means connected to said countdown means and effective in response to one predetermined electrical condition for conditioning said other signals to represent one indication of time and in response to another predetermined electrical condition said other signals to represent a different indication of time, said other signals comprising a first subset of signals each having 3 discrete levels and a second subset of signals each having two discrete levels, said first and second subsets being variably applied to said combinations of said display elements to condition said display elements to display analog representations of time.

4,209,975

TIME ADJUSTING MEANS FOR ELECTRONIC TIMEPIECE

Nakanobu Moritani; Toshihide Samejima; Toshio Matsumura; Hajime Oda, and Masanori Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Japan

Filed May 8, 1978, Ser. No. 903,476

Claims priority, application Japan, May 11, 1977, 52-54124; May 26, 1977, 52-61349; Apr. 10, 1978, 53-41943

Int. Cl.[2] G04B *27/00*; G04C *3/00*

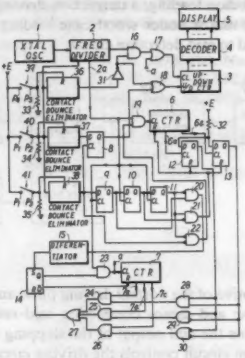
U.S. Cl. 368—186 **7 Claims**

1. A time adjusting circuit for an electronic timepiece, comprising:

first pulse generation means for generating electrical pulses at a manually selectable frequency;

detection means responsive to the electrical pulses from said first pulse generation means for detecting variation of the frequency of the electrical pulses and for developing an output signal having values to indicate when the frequency of the electrical pulses is within predetermined ranges;

second pulse generation means responsive to the output signal from said detection means for generating a different predetermined number of output electrical pulse according to the value range within which the detection means output signal lies; and



means for applying the output electrical pulses from said second pulse generation means as a time correction signal.

4,209,976

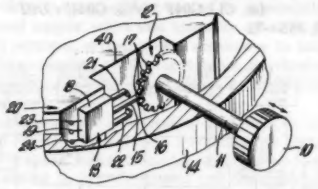
MEANS OF SETTING A SOLID STATE WATCH

Paul T. Flumm, Oakville, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 11, 1978, Ser. No. 932,973

Int. Cl.[2] G04C *9/00*

U.S. Cl. 368—187 **2 Claims**



1. A setting mechanism for an electronic watch having an electrooptical digital display for presenting time and a case with an opening for access to the interior thereof which comprises:

a module having a recess portion therein;

a shaft mounted in said opening for rotational and axial movement and having an interior end portion having affixed thereto a single toothed wheel having plurality of teeth spaced on its peripheral surface, said toothed wheel being aligned and dimensioned for being disposed within the recess portion of the module with the shaft being in a first axial position;

switch means having a single cantilevered flexible conductive spring switch blade having an end portion which is disposed for being engaged by the teeth of said toothed wheel with the shaft being in a second axial position and a time incrementing and a time decrementing switch contact each disposed on either side of the switch blade and aligned therewith such that electrical contact is made between the switch blade and either the time incrementing or time decrementing switch contact with upward or downward deflection of the switch blade by the teeth selectively with clockwise and counterclockwise rotation of the shaft; and

circuit means responsive to each switch blade contact with the time incrementing switch contact for incrementing the displayed time and to each contact with the time decre-

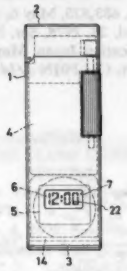
menting switch contact for decrementing the displayed time, whereby manual control of the rate of time correction either incrementing or decrementing is effected with fast or slow manual rotation selectively clockwise and counterclockwise of the shaft.

4,209,977

LIGHTER WITH A WATCH

Sadao Yoshinaga, Tokyo, Japan, assignor to Prince Industrial Development Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,339
Claims priority, application Japan, Apr. 20, 1978, 53-52650; Apr. 20, 1978, 52651
Int. Cl.[2] G04B *27/00, 37/12;* A23L *1/22*
U.S. Cl. 368—10 4 Claims



1. A lighter with a watch in which a watch module is fitted to be inserted into a plastic holder together with a battery, underneath a fuel tank within a lighter case, a display portion of the watch module faces to a window formed in the side of the lighter, a stop plate provided with a plurality of through-holes and a threaded hole is fitted in a lower portion internally of the lighter case so that earth plates are placed under pressure thereon, a select terminal and a set terminal of the watch module are respectively positioned in said through-holes, and a bottom lid is mounted on said stop plate so that a select button and a reading set button extending through the bottom lid are positioned movably towards and away from the respective terminals.

4,209,978

METHOD OF BENDING A LINK BLANK INTO A CHAIN LINK AND A BENDING MACHINE FOR CARRYING OUT THE METHOD

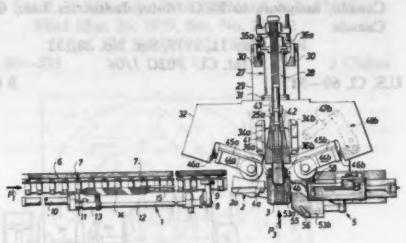
Sigge Johansson, and Rolf Bergström, both of Ramnäs, Sweden, assignors to Bulten-Kanthal AB, Hallstahammar, Sweden

Filed Jun. 12, 1978, Ser. No. 914,820
Claims priority, application Sweden, Jun. 17, 1977, 7707080
Int. Cl.[2] B21L *1/02*
U.S. Cl. 59—27 23 Claims

1. A method of bending a rod-shaped link blank (L) into a substantially closed chain link, including the steps of

(a) bringing said link blank (L) into a first receiving position (FIG. 5) with one of its end portions located between, on the one hand, two rotatable abutment rollers (4*a*,4*b*) disposed at a distance from each other and, on the other hand, a bending tool (3) reciprocable transversely between said abutment rollers;

(b) moving said bending tool to a position between said two rollers so as to bend said one end portion of said link blank (FIG. 6); (c) moving said link blank out from the abutment rollers (FIG. 7) and into a second receiving position (FIG. 9) with its other end portion located between, on the one hand, the abutment rollers and, on the other hand, the bending tool; and (d) returning said bending tool to a



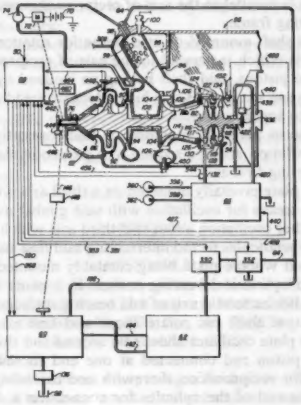
position between said rollers so as to bend said other end portion of said link blank (FIG. 10, 11).

4,209,979

GAS TURBINE ENGINE BRAKING AND METHOD

Geoffrey D. Woodhouse, and George B. Mattson, both of Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,361
Int. Cl.[2] F02C *9/02, 9/04*
U.S. Cl. 60—39.04 37 Claims



1. A method of decelerating a ground vehicle driven by a gas turbine engine having a gas generator section and a free turbine output power section driven by a gas flow from the gas generator section, comprising the steps of:

altering the incidence of gas flow from the gas generator section onto the free turbine section whereby said gas flow opposes rotation of the free turbine section;

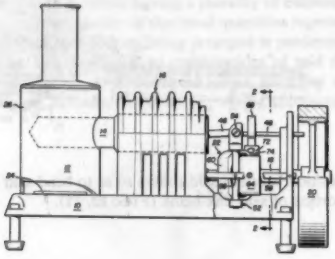
increasing gas generator section speed; and

subsequent to said altering and increasing steps, selectively mechanically interconnecting said gas generator and free turbine sections whereby the rotational inertia of the gas generator section tends to decelerate the free turbine section.

4,209,980
WOBBLE PLATE ENGINE

Jacques O. Pronovost, and Harry A. Derderian, both of Guelph, Canada, assignors to ECO Motor Industries Ltd., Guelph, Canada

Filed May 11, 1979, Ser. No. 38,132
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—517 **8 Claims**



1. In a conventional Stirling cycle engine of the type characterized by an elongated cylinder having a closed end and an open end, means for applying heat to the exterior of the cylinder to heat gas in the interior of the cylinder at the closed end thereof, a displacer piston mounted for a reciprocation within the closed end of the cylinder and a power piston axially aligned with the displacer piston and mounted for coaxial reciprocation between the displacer piston and the open end of the cylinder, the reciprocation of the displacer piston leading the corresponding stroke of the power piston by a predetermined phase angle, the improved means for properly phasing the reciprocation of the two pistons and for converting the reciprocation of the power piston into rotation of an output shaft which is parallel to the axis of reciprocation comprising:

a supporting frame;

an output shaft mounted on said frame for rotation about a first axis which is parallel to the axis of reciprocation of the two pistons, said shaft having an inclined cylindrical bearing surface the axis of which intersects said first axis at an acute angle;

gimbal means pivotally mounted on said supporting frame for oscillation about a second axis perpendicular to and intersecting first axis;

a wobble plate pivotally mounted on a third axis within said gimbal means for oscillation with said gimbal means and for further oscillation about said third axis which is mutually perpendicular to and intersecting said first and second axes, said wobble plate being rotatably mounted on said inclined cylindrical bearing surface in a plane which is perpendicular to said axis of said bearing surface whereby said output shaft can rotate about said first axis as said wobble plate oscillates about said second and third axes;

a power piston rod connected at one end to said power piston for reciprocation therewith and extending out of the open end of the cylinder for connection at its other end to said gimbal means, whereby reciprocation of said power piston causes said gimbal means to oscillate about said second axis;

a displacer piston rod connected at a first end to said displacer piston for reciprocation therewith and extending out of the open end of the cylinder for connection to a slider member which is mounted for reciprocating movement along an axis supported by said frame and parallel to said first axis;

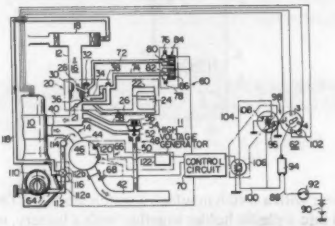
connecting means between said slider member and said wobble plate for causing said slider member and said displacer piston rod and displacer piston to reciprocate in response to the oscillation of said wobble plate;

reciprocation of said power piston causing said gimbal means and said wobble plate to oscillate about said second axis, which motion causes said output shaft to rotate due to the mounting of the wobble plate thereon, the resulting oscillation of said wobble plate about said third axis causing said slider member and said displacer piston to reciprocate in predetermined phased relationship with the reciprocation of said power piston, thereby to establish the proper sequence of relative motion between the two pistons to permit the engine to operate according to the Stirling cycle when a gas within the cylinder is heated.

4,209,981
METHOD AND AN APPARATUS TO CONTROL THE TEMPERATURE OF AN ENGINE EXHAUST GAS PURIFYING DEVICE

Yukio Miyamori, and Kenji Masaki, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 683,825, May 6, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 929,025
Claims priority, application Japan, May 16, 1975, 50/58908
Int. Cl.[2] F01N *3/14*
U.S. Cl. 60—274 **3 Claims**



1. In an internal combustion engine having an induction system including an air-fuel mixture forming means, a combustion chamber, an exhaust system including an exhaust purifying device and an exhaust gas recirculation system interconneeting said induction and exhaust systems, a method of rapidly raising and lowering the temperature in said purifying device between a predetermined upper temperature and a predetermined lower temperature comprising the steps of:

recirculating exhaust gas from said exhaust system to said induction system for lowering the peak combustion temperature in said combustion chamber;

sensing the temperature prevailing in said purifying device;

generating a first command signal when said temperature in said purifying device is sensed at or below said lower temperature and continuing to generate said command signal until said temperature in said purifying device rises to said upper temperature;

generating a second command signal when said temperature in said purifying device is sensed at or above said upper temperature and continuing to generate said second command signal until said temperature in said purifying device decreases to said lower temperature;

raising the temperature in said purifying device in response to said first command signal by:

enriching the air-fuel mixture produced by said air-fuel mixture forming means;

retarding the ignition timing of the ignition of said enriched air-fuel mixture in said combustion chamber;

supplying secondary air into said exhaust system upstream of said purifying device; and

producing sparking in said purifying device so as to positively ignite the large amount of combustible matter issuing from said combustion chamber due to said retarded ignition and enriched air-fuel mixture in the presence of said secondary air thus negating th effect of the lowering of the peak combustion temperature by said recirculation of exhaust gas; and

lowering the temperature in said purifying device in response to said second command signal by

leaning said air-fuel mixture produced by said air-fuel mixture forming means;

advancing the ignition timing of the ignition of said leaned air-fuel mixture in said combustion chamber so as to efficiently combust said mixture thus reducing the amount of combustible matter subsequently exhausted into said exhaust system;

terminating the supply of said secondary air; and

terminating the production of said sparking, so that exhaust gases having a relatively low temperature due to the suppression of said peak combustion temperature by said exhaust gas recirculation and which contain relatively little combustible matter are fed into said purifying device permitting the temperature thereof to tend toward said lower temperature.

4,209,982

LOW TEMPERATURE FLUID ENERGY CONVERSION SYSTEM

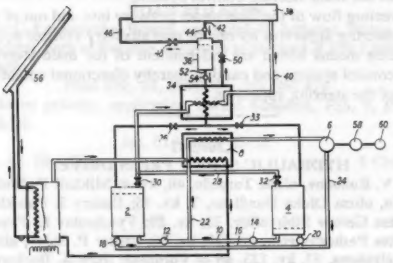
Clyde T. Pitts, Sierra Vista, Ariz., assignors to Arthur W. Fisher, III, Tampa, Fla.

Filed Apr. 6, 1978, Ser. No. 894,136

Claims priority, application United Kingdom, Apr. 7, 1977, 14910/77

Int. Cl.[2] F03G *7/06*

U.S. Cl. 60—325 **7 Claims**



1. A low temperature fluid energy conversion system comprising a primary circuit including a first and second cylinder for containing a working fluid, a heat exchange means coupled through a working fluid supply means to said first and second cylinder alternately to receive said working fluid from said first and second cylinder to heat said working fluid, a motor means operatively coupled to said heat exchange means to receive said working fluid therefrom to generate mechanical energy thereby, and a working fluid return means coupled between said motor means and said first and second cylinders alternately to return said working fluid to said first and second cylinder, a secondary circuit including a liquid expansion agent supply means coupled to said first and second cylinders to supply said liquid expansion agent to said first and second cylinder such that, as said liquid expansion agent is alternately supplied to said first and second cylinder, the heat from said working fluid within said first and second cylinder vaporizes said liquid expansion agent forcing said working fluid from said first and second cylinder to said heat exchange means, a vapor expansion agent return means coupled between said first and second cylinders and said liquid expansion agent supply means alternately to return said vapor expansion agent to said liquid expansion agent supply means.

4,209,983

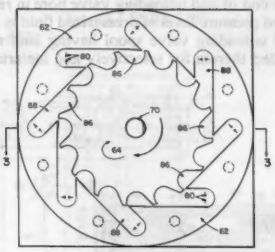
INTERNAL ELECTRIC EXPLOSION ENGINE

Benjamin Sokol, 24 Hiawatha Blvd., Oakland, N.J. 07436

Filed Mar. 26, 1979, Ser. No. 23,562

Int. Cl.[2] F15B *1/02, 15/18*

U.S. Cl. 60—325 **3 Claims**



1. An internal electric explosion engine, comprising;

a vessel having a plurality of interior spaces with inlet and outlet means for respectively introducing a fluid into said spaces at relatively low pressure and removing said fluid from said spaces at relatively high pressure, said spaces serving as explosion chambers;

electric discharge explosion in situ means comprising spaced electric discharge elements disposed in each of said explosion chambers, said discharge means further including means for applying electrical potential of opposite polarities to said discharge elements;

a fluid;

storage means for holding said fluid under pressure;

conduit means for circulating said fluid between said vessel and said storage means;

drive means adapted to be driven by said pressurized fluid so as to do work;

said vessel, said explosion means, said storage means and said conduit means forming a closed loop fluidic pressure system;

wherein said discharge means is adapted to explode in said fluid within said vessel said exploded fluid expanding in volume to increase the internal pressure in said system providing said pressurized fluid whereby said drive means is driven.

4,209,984

HYDRAULIC SYSTEM WITH UNLOADING VALVE ASSEMBLY

Carl E. Kittle, and Richard A. Wittren, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

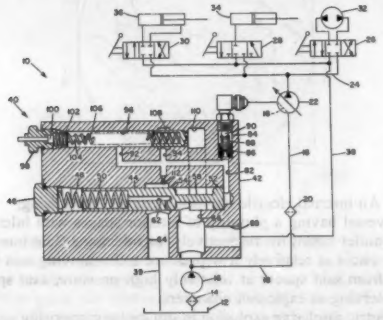
Filed Oct. 23, 1978, Ser. No. 953,579

Int. Cl.[2] F15B *11/16, 21/04*

U.S. Cl. 60—328 **6 Claims**

1. A hydraulic system comprising: a fluid reservoir; a charge pump having an inlet connected to said reservoir and an outlet for providing pressurized fluid; a charge passage connected to the outlet of said charge pump; a supply pump having an inlet connected to said charge passage and an outlet for providing high pressure fluid; a supply passage connected to the outlet of said supply pump; fluid function means having an inlet connected to said supply passage for using the high pressure fluid from said supply passage and having an outlet for exhausting low pressure fluid therefrom; a return passage connected to the outlet of said fluid function means; a valve body having an unloading valve bore provided therein with a first end connected to said charge passage proximate the inlet of said supply pump, said valve body having a main passageway provided therein connected directly to said charge and return passages and intersecting said unloading valve bore proximate said first end; said valve body having a reservoir passageway provided therein connected to said reservoir and intersecting said un-

loading valve bore distal from said first end; said valve body having orifice means provided therein connecting the first end of said unloading valve bore to said reservoir passageway; and an unloading valve spool disposed in said unloading valve bore and biased towards the first end thereof to block the first end from said main passageway and said main passageway from said reservoir passageway, said unloading valve spool slidable from the first end of said unloading valve bore in response to a predetermined pressure level of pressurized fluid in said charge passage, said unloading valve spool having land and groove means provided therein for selectively and meteringly block-



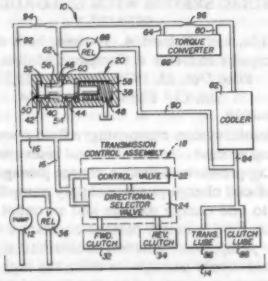
ing and connecting said main passageway from and to said reservoir passageway as said unloading valve spool slides away from the first end of said unloading valve bore whereby said unloading valve spool connects the pressurized fluid from said charge pump and the low pressure fluid from said fluid function to said reservoir when the pressurized fluid is above the predetermined pressure level and disconnects the pressurized and low pressure fluid from said reservoir when the pressurized fluid is below the predetermined pressure level to cause the low pressure fluid to add to the pressurized fluid to said supply pump.

4,209,985

TRANSMISSION CONTROL SYSTEM

Ralph E. Master, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 11, 1978, Ser. No. 973,047
Int. Cl.[2] F16D *33/00*
U.S. Cl. 60—337 **5 Claims**



1. In a transmission control system (10) for a transmission including a torque converter (66), and of the type having fluid inlet and outlet passages (64,80) leading respectively to and from the torque converter (66), a source of fluid pressure (16), and a pressure regulating valve (20) for relieving fluid from the source (16) at a preselected pressure to the fluid inlet passage (64), the improvement comprising:

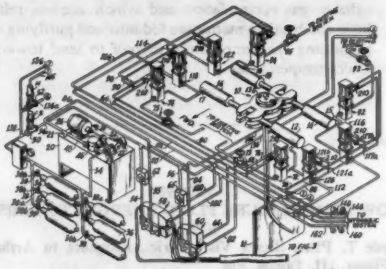
a flow limiting passage (96) directly connecting said fluid inlet and outlet passages (64,80) to said torque converter (66).

4,209,986

METHOD OF AND APPARATUS FOR AUXILIARY CONTROL OF FLUID OPERATED STEERING APPARATUS FOR SHIPS, BOATS AND THE LIKE

Robert F. Cunningham, 3 Willow Crest Dr., Katonah, N.Y. 10536

Filed Apr. 17, 1978, Ser. No. 897,146
Int. Cl.[2] F15B *20/00*
U.S. Cl. 60—403 **37 Claims**



26. A method for enabling control of fluid operated steering apparatus in ships, boats and the like in the event the main steering control system has been rendered defective, comprising the steps of:

providing a quantity of fluid under pressure independently of the main steering control system;

directing flow of the fluid under pressure into and out of the steering apparatus by one of two auxiliary control actuation means which are independent of the main steering control system, and causing thereby directional actuation of the steering apparatus.

4,209,987

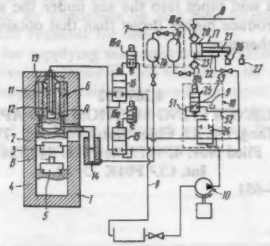
HYDRAULIC SCREW PRESS DRIVE

Ivan V. Kononov, ulitsa Torpedo, 40, kv. 4; Mikhail P. Makushin, ulitsa Oleka Dundicha, 7, kv. 15; Dmitry I. Polukhin, ulitsa Geroev Sibiryakov, 23, kv. 59; Vyacheslav E. Popov, ulitsa Peshestreletskaya, 125, kv. 76; Viktor P. Salov, ulitsa Zhelyabova, 17, kv. 123, all of Voronezh; Jury A. Bocharov, 15 Parkovaya, 18/1, kv. 109, Moscow; Vasily Y. Golovin, ulitsa Mashinostroitelei, 38, kv. 15, Voronezh; Natalya M. Mirskaya, ulitsa Voroshilova, 9[a], kv. 46, Chelyabinsk; Stanislav I. Cherny, ulitsa F. Engelsa, 46, kv. 13, and Ivan F. Yakovenko, ulitsa Plekhanovskaya, 41, kv. 21, both of Voronezh, all of U.S.S.R.

Filed Jul. 18, 1978, Ser. No. 925,758
Int. Cl.[2] F15B *1/02*; B30B *1/08*
U.S. Cl. 60—413 **4 Claims**

1. A drive of a hydraulic screw press comprising: a source of pressure; a low-pressure hydraulic line; a pneumatic line; a power cylinder whose movable member is connected with a press slide of the screw press; a pneudraulic accumulator comprising a hydraulic chamber communicating with said pressure source and a pneumatic chamber; an inlet valve; the power cylinder having a chamber communicating with the hydraulic chamber of said pneudraulic accumulator through said inlet valve; a discharge valve through which said chamber of the power cylinder communicates with said low-pressure hydraulic line; means for charging the pneumatic chamber of said pneudraulic accumulator comprising a pneudraulic cylinder with a piston, a distributor, and nonreturn valves; the pneudraulic cylinder of said means for charging the pneumatic chamber of said pneudraulic accumulator comprises a hydrau-

lic under-piston chamber communicated alternately through the distributor with said pressure source and said low-pressure hydraulic line, and an above-piston pneumatic chamber com-



municated alternately through the nonreturn valves respectively with said pneumatic line and the pneumatic chamber of the pneudraulic accumulator.

4,209,988

SAFETY CONTROL SYSTEM FOR SELF-PROPELLED ROAD ROLLERS

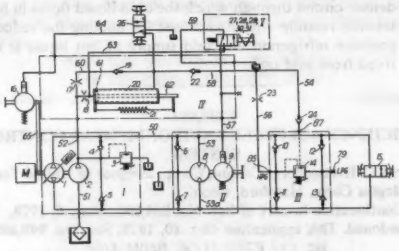
Colin G. Langworthy, Bristol, and Ralph G. Jefferies, Bitton Nr. Bristol, both of England, assignors to Stothert & Pitt Limited, Bath

Filed Dec. 11, 1978, Ser. No. 967,921

Claims priority, application United Kingdom, Feb. 9, 1978, 5250/78

Int. Cl.² F15B *15/18*

U.S. Cl. 60—431 **8 Claims**



1. A safety control system for a self-propelled road roller with a hydrostatic transmission, including a prime mover; an hydraulic pump drivable by the prime mover and included in a main hydraulic circuit incorporating a motor with a power-off brake device, a check valve bridge with a ventable relief valve and a main control valve; and means for selecting automatically a predetermined operating speed for said prime mover; wherein said speed selecting means comprise a secondary hydraulic circuit incorporating means operatively connectible with said prime mover speed control means and controllable by said ventable relief valve in accordance with the operation of said main control valve.

4,209,989

SERVO MOTOR OPERATED BY A HEATABLE EXPANSIBLE SUBSTANCES

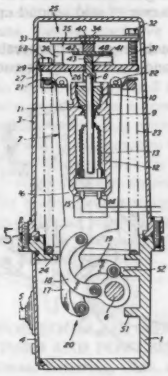
Jens N. Andresen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 20, 1978, Ser. No. 898,099

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717467

Int. Cl.² F03G *7/06*

U.S. Cl. 60—527 **6 Claims**



1. A servomotor assembly, comprising, a housing, first and second piston and cylinder motor parts with an expansible substance and a heating element in said cylinder part, abutment means providing limiting higher and lower pressure positions for said cylinder corresponding to predetermined higher and lower pressures of said substance, said substance exerting an over pressure higher than said predetermined pressure when subjected to continued heating at said higher pressure position, said substance exerting an under pressure lower than said predetermined lower pressure when subjected to continued cooling at said lower pressure position, a return spring cooperable with said cylinder motor part, over pressure and under pressure limiting switch means operable by said position motor part, over pressure and under pressure spring means for said switch means which are respectively stronger and weaker than said return spring and respectively oppose and assist the movement of said second motor part, at least one of said springs being in the force transmitting path of said piston motor part.

4,209,990

GRAVITY FLOW HYDRAULIC DEVICE

Garland T. Shelton, Jr., Hodgenville, Ky., assignor to Shelton and Ostrowski Incorporated, Hodgenville, Ky.

Filed Apr. 18, 1978, Ser. No. 897,266

Int. Cl.² F03G *3/00*

U.S. Cl. 60—640 **9 Claims**

1. An improved hydraulic device for use with fluid flowing by the force of gravity, of the type having a base, an upstanding support member affixed to said base, a balance beam pivotally mounted on said support member, counterweight means mounted on one end of said balance beam, a fluid container connected to the other end of said balance beam and arranged to receive said fluid flowing by the force of gravity; the improvement comprising:

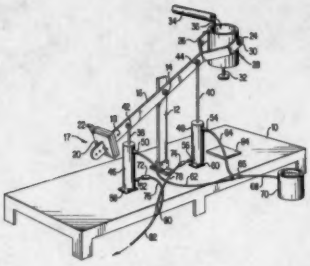
fluid release means having a valve plate arrange for vertical movement within said fluid container and dimensioned to form substantially the entire bottom of said fluid container, said fluid release means having an actuation member attached to said valve plate and arranged to vertically displace said valve plate to release quickly substantially all of the fluid in said fluid container upon said actuation

member contacting said base and having alignment means located inside and fluid container for preventing misalignment of said valve plate and said container when said valve plate is vertically displaced by said actuation member;

two drive rods each having a first end pivotally connected to said balance beam in spaced apart relationship from the point where said balance beam is pivotally mounted to said support member and having a second end for providing a vertical reciprocating motive drive;

two rack and pinion gear means each having a respective rack connected to one of said second ends of said drive rods;

two ratchet means each respectively operably engaged with said pinion gears and each having an output shaft rigidly



attached thereto, said two ratchet means being arranged to transfer the rotary motion of said pinion gears to cause said output shafts to rotate in the same direction; and

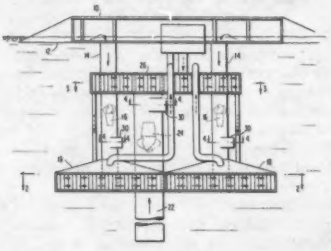
transmission means operably connected to said output shafts of said ratchet means and having an output shaft for producing a continuous unidirectional rotary driving force, whereby said fluid flowing into said container causes said container to overcome the weight of said counterweight and causes said balance beam to pivot, thereby moving one of said drive rods in a first direction and bringing said actuation member in contact with said base and instantaneously releasing substantially all of said fluid from said container, and thereby causing the weight of said counterweight to pivot the balance beam and move the other of said drive rods in said first direction.

4,209,991

DYNAMIC POSITIONING OF SEA THERMAL POWER PLANTS BY JET PROPULSION

James H. Anderson, York, Pa., assignor to Sea Solar Power, York, Pa.

Filed Sep. 19, 1978, Ser. No. 943,712
Int. Cl.[2] F03G 7/04
U.S. Cl. 60—641 8 Claims



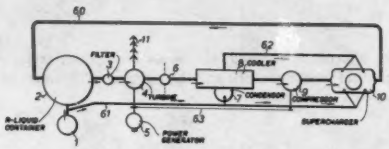
1. In a sea thermal power plant having depending inlet pipes terminating in heat exchangers having adjustable deflectors with a pump in said pipes for forcing water through said pipes and heat exchangers to produce thrust directed by said deflectors in any desired direction for moving the plant over the water surface, means provided in said pipes downstream of said pumps for directing the greater portion of the water flowing through said pipes into the sea under the action of said pumps to produce higher thrust than that obtainable through the heat exchangers.

4,209,992

POWER GENERATING METHOD AND APPARATUS

Shao Chih-Kang, No. 82, Chien Kuo South Rd., Taipei, Taiwan

Filed Nov. 4, 1977, Ser. No. 848,726
Int. Cl.[2] F01K 25/10
U.S. Cl. 60—651 3 Claims



1. A method of power generation comprising performing a working cycle on a refrigerant used as a working medium and utilizing said refrigerant to drive a turbine operating a power generator, said cycle including the steps of:

Providing a source of refrigerant in a compressed liquid phase;

Heating said source by immersion in a tank of relatively hot liquid to provide high pressure vaporized refrigerant;

Passing said high pressure vaporized refrigerant through the turbine to drive the turbine, passage of the vaporized refrigerant through the turbine reducing the pressure of the vaporized refrigerant;

Exhausting the reduced pressure vaporized refrigerant from the turbine;

Cooling the reduced pressure vaporized refrigerant;

Compressing the cooled vaporized refrigerant in a compressor arrangement having supplies of hot and cold liquid respectively to convert the refrigerant to its liquid phase at a pressure higher than the source pressure; and

Returning the compressed liquid refrigerant to said source, wherein said supply of cold liquid is derived from a condensor circuit through which the cold liquid flows in heat transfer relation with liquid used for cooling the reduced pressure refrigerant and said supply of hot liquid is derived from said tank.

4,209,993

EFFICIENCY AIR CYCLE ENVIRONMENTAL CONTROL SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corp., Hartford, Conn.

Continuation-in-part of Ser. No. 884,295, Mar. 6, 1978, abandoned. This application Oct. 10, 1978, Ser. No. 949,605
Int. Cl.[2] F25D 21/00; B60H 3/04
U.S. Cl. 62—80 20 Claims

1. In an air cycle refrigeration system for aircraft receiving pressurized air and supplying refrigerated air to an enclosure;

a turbine having an inlet and an outlet, said inlet receiving said pressurized air and said turbine expanding and cooling said air through said outlet;

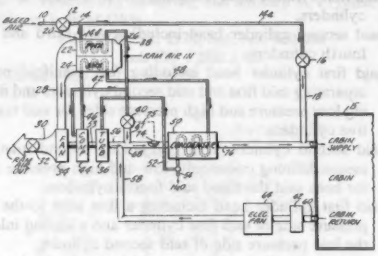
means for recirculating air at a temperature above freezing from said enclosure to a junction downstream from the outlet of said turbine whereby said recirculated air is mixed with the cool air from said turbine to melt ice present in said turbine outlet and to provide cooling to said recirculated enclosure air;

a regenerative condenser connecting, through heat transfer surfaces within said condenser, the pressurized air up-

stream of said turbine inlet with the cooled air mixture downstream of said junction, said cooled air mixture absorbing heat from said pressurized air and cooling said pressurized air below its dewpoint so that moisture in said pressurized air condenses on said heat transfer surfaces and is made available for removal;

and means for supplying said cooled air mixture from said regenerative condenser to said enclosure, the quantity of airflow supplied to said enclosure being equal to the sum of the pressurized air and the recirculated air.

18. A method for cooling an aircraft enclosure from a source of pressurized air comprising the steps of:



removing moisture from said pressurized air by heat exchange in a regenerative condenser between said pressurized air and a coolant fluid;

expanding said pressurized air, after removal of moisture therefrom, through a turbine to cool said air;

mixing air recirculated from said enclosure with said cooled air at the outlet of said turbine so that the resultant air mixture prevents ice in said turbine and cools said recirculated air;

passing said air mixture through said regenerative condenser as said coolant fluid;

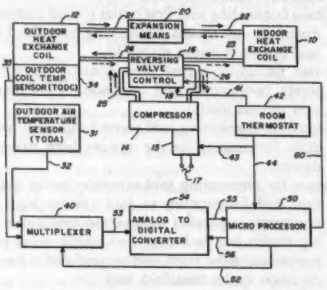
and supplying said air mixture from said regenerative condenser to said enclosure, said air mixture being equal to the sum of said pressurized air and said recirculated air.

4,209,994

HEAT PUMP SYSTEM DEFROST CONTROL

Dale A. Mueller, St. Paul, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 24, 1978, Ser. No. 954,141
Int. Cl.[2] F25D *21/06*; F25B *41/00*
U.S. Cl. 62—155 **11 Claims**



1. An outdoor coil defrost control system (hereinafter "defrost control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said defrost control system comprising:

outdoor air temperature sensing means (hereinafter "TODA") having an output indicative of outdoor air temperature;

outdoor coil temperature sensing means (hereinafter "TODC") having an output indicative of the temperature of said outdoor coil;

means (hereinafter "COM") operatively associated with said compression means and adapted to have an output indicative of the operation of said compression means; and

controller means having operative connections to said TODA, TODC, and COM so as to receive the outputs thereof, said controller having a timing function which is initiated upon (i) the outdoor coil temperature as sensed by TODC being at or below a preselected value and (ii) said compression means being operated,

the duration of said timing function being determined on a substantially continuous basis by the magnitude of the outdoor air temperature as sensed by TODA, and

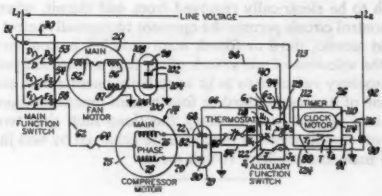
said controller means having an operative connection to said system and being adapted, upon completion of said timing function, to place said system into an outdoor coil defrost mode of operation.

4,209,995

CONTROLS FOR ROOM AIR CONDITIONER WITH TIMER AND POWER SAVER

Donald C. Ferdelman, Kettering, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Jan. 23, 1979, Ser. No. 5,862
Int. Cl.[2] F25D *17/06*
U.S. Cl. 62—157 **1 Claim**



1. In a self-contained room air conditioner unit including a housing enclosing a compressor driven by a motor, a condenser, an evaporator connected in a refrigeration circuit and a fan driven by a fan motor for circulating room air to be cooled at high and low speeds into heat exchange relation with said evaporator; and in which said housing has a room-side section with a control area thereon; an electric timer located at said control area, said timer including a timer switch having contacts adapted to be opened and closed and a timer motor electrically connected in a control circuit between first and second supply conductors whereby to run continuously with said unit, thermostat switch means operative to cycle the compressor motor in response to the temperature of said circulating air; the improvement wherein main function manually actuable switch means located at said control area and connected in said circuit having four interlocked switches for alternatively selecting a unit first off position, a second position operative to connect a first terminal of said fan motor to said first supply conductor for a low speed fan only function, a third position operative to connect said first terminal of said fan motor and one side of said compressor motor to said first supply conductor for a low fan speed cooling function and a fourth position operative to connect a second terminal of said fan motor and said one side of said compressor motor to said first supply conductor for a high fan speed cooling function; auxiliary function manually actuable switch means located at said control area in juxtaposed relation to said main function switch means and connected in said circuit providing a first

pair of interlocked switches and a second pair of interlocked switches, said thermostat switch means having one side connected to a first common terminal and its other side connected to one side of the second switch of said second pair of switches which in turn has its other side connected to one side of said timer switch, said timer switch other side connected to the other side of said power source, said first common terminal connected by an external shunt to one side of the first switch of said first pair of switches while the other side of said first switch is in turn connected to a third terminal of said fan motor, said timer motor having one side connected to said first supply conductor and its other side connected to the other side of said power source, the second switch of said first pair of switches having one side connected to said one side of said second switch of said second pair of switches and its other side connected to said other side of said first switch of said first pair of switches, the first switch of said second pair of switches having its one side connected to said one side of said second switch of said second pair of switches and its other side connected to the other side of said power source, said compressor motor having its other side connected to said first terminal, whereby upon the opening of said first switch of said first pair of switches closes its interlocked second switch such that said fan motor is energized for a continuous operation, and whereby upon the opening of said second switch of said first pair of switches closes its interlocked first switch completing an electrical path through said external shunt and said thermostat to said one side of said second switch of said second pair of switches such that said fan motor is cycled on-and-off by said thermostat, and whereby upon the closing of said second switch of said second pair of switches opens its interlocked first switch causing said timer contacts to be electrically inserted in said control circuit for timed operation thereof, and whereby upon the closing of said first switch of said second pair of switches opens its interlocked second switch causing said timer switch to be electrically removed from said circuit, whereby said control circuit permits the operator to manually select one of said second, third or fourth main switches in conjunction with the selection of one switch of the first and second pair of said auxiliary switches so as to selectively operate said unit in any one of its second, third or fourth main functions together with one of said four auxiliary functions such that twelve different combinations of functions are achieved by said juxtaposed main and auxiliary switch means.

4,209,996

RECIPROCATING COMPRESSOR REFRIGERATION SYSTEM USING STEP EXPANSION AND AUTO STAGING

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 924,015, Jul. 11, 1978, which is a continuation-in-part of Ser. No. 882,729, Mar. 2, 1978, which is a continuation-in-part of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,586, Jan. 29, 1976, Pat. No. 4,058,988. This application Oct. 12, 1978, Ser. No. 950,905

Int. Cl.[2] **F25B** *7/00*

U.S. Cl. 62—175 **18 Claims**

1. A refrigeration system for conditioning a confined space, said system comprising:

a first, inside heat exchanger coil within said space,

a second, outside heat exchange coil exterior of said space,

a third heat exchange coil exterior of said space and functioning to supply heat to the system or to store heat derived therefrom,

a fourth heat exchange coil functioning as a system high temperature condenser for supplying a high temperature heating load,

a compressor,

conduit means carrying refrigerant and connecting said coils and said compressor in a closed refrigeration loop circuit and including means for selectively causing said coils to function as evaporators or condensers, with said coils functioning dependent upon temperature parameters as high pressure condenser, intermediate pressure condenser, low pressure evaporator and intermediate pressure evaporator,

a subcooler within said circuit,

said subcooler including a subcooling heat exchange coil for subcooling condensed refrigerant from any of said first, second, third and fourth coils functioning as a condenser,

the improvement comprising:

said compressor comprising a first and a second cylinder head, and first, second, third and fourth cylinders,

said first cylinder head including said first and said second cylinders,

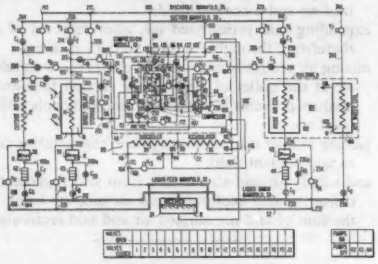
said second cylinder head including said third and said fourth cylinders,

said first cylinder head including first manifold means separating said first and said second cylinders and defining low pressure and high pressure sides for said respective cylinders,

said second cylinder head comprising second manifold means defining commonly, low and high pressure sides for both said third and said fourth cylinders,

said first cylinder head including a first inlet to the low pressure side of said first cylinder and a second inlet to the low pressure side of said second cylinder,

said second cylinder head comprising a third inlet, said third inlet being common to the low pressure side of said third and said fourth cylinders,



said first cylinder head comprising a first outlet for said first cylinder and a second outlet for said second cylinder,

said second cylinder head comprising a third outlet, said third outlet being common to said third and said fourth cylinders,

said conduit means further including:

a common outlet manifold,

means connecting said first outlet to said common outlet manifold and means connecting said third outlet to said common outlet manifold,

means including a first flow control valve for selectively connecting said common outlet manifold to said second inlet,

means for connecting said second outlet to one of said coils functioning as the system high pressure condenser,

means for connecting said common outlet manifold to said coil functioning as said system high pressure condenser in parallel with said second outlet connecting means and including first check valve means for preventing flow from said second outlet back to said common outlet manifold, and

second check valve means between said common outlet manifold and said third outlet, such that said coil functioning as the system high pressure condenser may receive first stage compressor discharge from all four cylinders through said first, second and third outlets; from said first and second outlets alone with

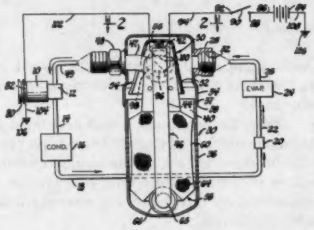
said third and fourth cylinders supplying refrigerant to one of said coils functioning as the system intermediate pressure condenser; from said first and second outlets alone with said third outlet connected to said second inlet upon opening of said flow control valve with said first and second cylinders discharging in second stage, and from said second outlet alone with said first, third and fourth cylinders functioning in first stage compression and feeding to the second inlet through said flow control valve.

4,209,997

ACCUMULATOR CYCLING SWITCH

Frank W. Hodits, Jr., Kettering, and Richard K. Fryman, Miamisburg, both of Ohio

Filed Nov. 13, 1978, Ser. No. 960,458
Int. Cl.[2] F25B *1/00*
U.S. Cl. 62—226 **1 Claim**



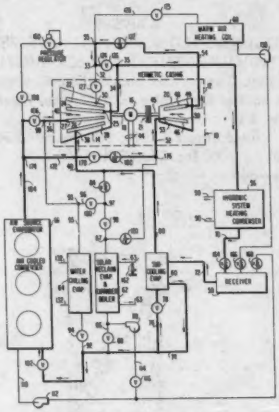
1. A combination accumulator housing and cycling switch assembly for an air conditioning system to control the operation of an electrically controlled compressor for the purpose of regulating refrigerant pressure within an evaporator which is located upstream and connected to the housing, thus preventing evaporator temperature from decreasing below a frost-accumulation level, the housing being a hollow member with walls having an inlet adapted to be connected to the output of the evaporator for receiving into said chamber compressed refrigerant and an outlet adapted to be connected to the inlet of a compressor for supplying refrigerant to said compressor, aperture means in a planar wall portion of said housing, a switch support member joined to said wall portion encircling said aperture means, an electrical switch supported by said switch support member, including a projecting movable portion, a washer member secured within said support member with its inner face defining a planar diaphragm seat, an annular resilient diaphragm within said support member mounted on said seat in overlying spaced concentric relation with said aperture means, the periphery of said diaphragm contacting said seat thereby establishing a normally planar position of said diaphragm substantially parallel to said wall portion, a resilient sealing ring positioned between the wallside of said diaphragm periphery and said wall portion to provide a seal, whereby said resilient diaphragm is effective to close said aperture means to thereby close off communication between the interior of said housing and the ambient air, an axial bore through said washer member aligned with said housing aperture means including a counterbore on said inner face defining a stepped seat, the central portion of the diaphragm extending over said counterbored portion being resiliently deformable so as to be movable in an outward direction from its planar seated position in response to pressure differences between said housing interior and the ambient air, an actuator button for said switch means having a stem portion positioned in slidable relation within said axial bore and an enlarged rounded head portion positioned in engagement with said diaphragm central portion for axial travel in said counterbore, said counterbore outer peripheral edge being radiused substantially complementary to said rounded head defining a cuspidal-like sectioned annular gap between said head portion and said counterbore whereby said diaphragm central portion partially conforms to said annular gap upon a relative pressure increase within said housing, the underside of said head portion defining shoulder means operative to contact said stepped seat for limiting movement of said button in an outward direction for transmitting movements of said diaphragm to said switch movable portion by means of said actuator button, whereby upon removal of said electrical switch said actuator button shoulder means contacts said stepped seat thereby limiting said diaphragm to a predetermined maximum outwardly bowed position obviating the need to discharge said air conditioning system of its refrigerant charge during the removal of said switch means.

4,209,998

AIR SOURCE HEAT PUMP WITH DISPLACEMENT DOUBLING THROUGH MULTIPLE SLIDE ROTARY SCREW COMPRESSOR/EXPANDER UNIT

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Dec. 21, 1978, Ser. No. 972,151
Int. Cl.[2] F25B *9/00*; F04B *9/14*
U.S. Cl. 62—324 **2 Claims**



1. In a closed loop refrigeration system including:
a helical screw rotary compressor including a suction port and a discharge port,
a helical screw rotary expander including a feed port and a discharge port,
means for mechanically connecting said expander to said compressor,
motor means for driving said compressor and said expander,
a first heat exchange coil for conditioning a space and the like,
a second heat exchange coil,
said compressor comprising a plurality of axially adjustable compressor slide valves including at least a capacity control slide valve for unloading the compressor,
conduit means carrying refrigerant and forming a primary closed loop refrigeration circuit for connecting said screw compressor and said first and second coils in series, in that order,
a third heat exchange coil connected intermediate of said first and second coils to receive condensed refrigerant from the coil functioning as the system condenser and having its outlet side connected to the inlet of said expander, and
means for connecting the outlet port of said expander to the coil functioning as the system condenser to permit expansion of working fluid within said expander and to thereby

drive said compressor absent energization of said drive motor,

the improvement comprising:

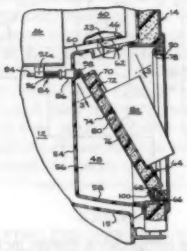
an auxiliary supply line connecting the outlet of said coil functioning as the system evaporator when in heat pick up mode to said expander inlet port and including selectively operable valve means such that upon energization of said drive motor and opening of said selectively operable valve means, said coil functioning as the system evaporator feeds vaporized refrigerant at low pressure both to said compressor and simultaneously to said expander for compression to essentially double the displacement of said system and increase the acceptable heat transfer load of the coil functioning as system condenser.

4,209,999

HOUSEHOLD REFRIGERATOR WITH THROUGH-THE-DOOR ICE SERVICE

Donald G. Falk, Taylorsville, and William J. Armstrong, Jeffersontown, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Jun. 12, 1978, Ser. No. 914,634
Int. Cl.[2] F25C *5/18*
U.S. Cl. 62—344 **10 Claims**



1. A refrigerator having a freezing compartment with a primary door and an automatic motor driven ice dispenser within the freezing compartment actuated by a switch, the automatic ice dispenser comprising an ice mold, means for ejecting ice pieces from the mold, a receptacle for receiving the ice pieces from the mold, and a rotatable dispensing means positioned within the receptacle for moving the ice pieces through the receptacle and discharging the ice pieces from an opening in the receptacle;

the primary door includes a passage therethrough for receiving the ice pieces from the receptacle outlet when the primary door is closed and a recess in communication with the passage and having an opening in the exterior surface of the primary door;

the recess has a secondary door hingedly secured to the primary door that seals the opening on the exterior surface of the primary door;

the switch is located remote from the freezer door; and

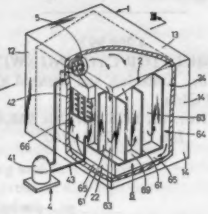
actuating means cooperating with the secondary door to actuate the switch and energize the dispenser during the opening of the secondary door whereupon ice pieces are delivered through the receptacle outlet, the primary door passage, and into the recess.

4,210,000

REFRIGERATING APPARATUS

Doo S. Lee, 11-10 Miyakojimanakadori 3-chome, Miyakojimaku, Osaka, Japan

Filed Jan. 5, 1978, Ser. No. 867,279
Claims priority, application Japan, Mar. 9, 1977, 52-26543; Dec. 8, 1977, 52-148534
Int. Cl.[2] F25D *17/04, 17/06;* A47F *3/04*
U.S. Cl. 62—417 **8 Claims**



1. A refrigerating apparatus in which air is passed through the cooler of a freezer in contact therewith to cool the air, said apparatus comprising:

an airtight chamber having an inner wall defining a storage compartment, an outer wall slightly spaced apart from the inner wall, ribs provided within the airtight chamber and closing plates provided between the ribs wherein air retaining spaces and air circulation channels are formed in the airtight chamber;

cooling means disposed within the airtight chamber for cooling the air enclosed in the airtight chamber; and

a blower provided within the airtight chamber,

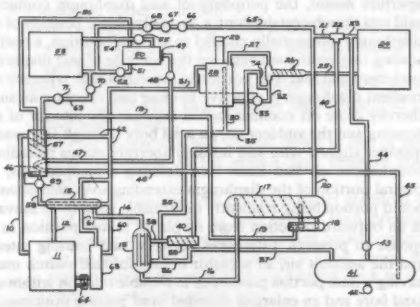
wherein the airtight chamber is isolated from outside and wherein a portion of the cooling air flowing out from the cooling means stagnates in the air retaining spaces and remaining cooling air passes through the circulation channels to refrigerate the storage compartment through the inner wall and returns to the cooling means.

4,210,001

REFRIGERATION SYSTEM HAVING IMPROVED HEAT TRANSFER AND REDUCE POWER REQUIREMENT FOR VARIOUS EVAPORATIVE REFRIGERANTS

Bruce D. Miller, Sr., 3303 Chickadee Rd., Louisville, Ky. 40213

Filed Jul. 31, 1978, Ser. No. 929,852
Int. Cl.[2] F25B *43/02*
U.S. Cl. 62—468 **21 Claims**



1. In an improved refrigerating system of the type which includes

(A) an evaporator for circulating a fluid refrigerant therethrough to absorb heat from a refrigerating medium,

whereby said medium is cooled and said refrigerant is converted from a liquid to a gas,

(B) an oil lubricated compressor connected in receiving relation to said evaporator for compressing and superheating said gas,

(C) a condenser connected in receiving relation to said compressor for condensing said compressed gas to form a liquid, and

(D) a receiver connected in liquid receiving relation to said condenser for storing said liquid and connected in liquid supplying relation to said evaporator,

the improvement comprising

(E) heat exchanger means having a liquid refrigerant confining shell and a heat exchanger tube disposed in said shell, an inlet end of said tube being connected in receiving relation to said compressor for receiving said compressed, superheated gas therein, said shell having an inlet port connected in receiving relation to an outlet port of said condenser for circulating a portion of the liquid refrigerant condensed in said condenser about said tube to partially desuperheat said compressed gas, and

(F) an impurity removing oil-mist separator/collector unit connected in receiving relation to an outlet end of said tube for removing impurities, including oil, from said partially desuperheated gas, said unit being connected in supplying relation to said condenser for supplying cleaned, partially desuperheated gas to said condenser.

4,210,002

TRANSMISSION JOINT WITH BELLOWS DUST-GUARD

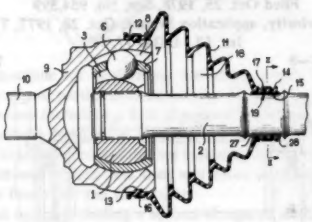
Jacques P. Dore', Colombes, France, assignor to Societe Anonyme Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Jan. 3, 1979, Ser. No. 664

Claims priority, application France, Jan. 4, 1978, 78 00174

Int. Cl.[2] F16D *3/84*

U.S. Cl. 64—32 F **5 Claims**



1. A transmission joint with a bellows-type dust-guard of elastomer, the joint comprising an inner element rigid with a first shaft and drivingly engaging for rotation an outer element rigid with a second shaft, said bellows dust-guard comprising end collars fastened by clamping means, the one to said outer element and the other to said first joint shaft, means being provided for connecting the inner space of the joint and dust-guard assembly to the surrounding atmosphere, said connecting means comprising a split resilient ring interposed between said first shaft and the corresponding end collar, and so shaped as to provide a free air passage along said shaft when the collar is clamped in position.

4,210,003

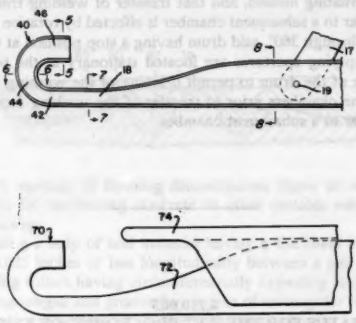
KNITTING NEEDLE WITH REINFORCED HOOK

John J. Sqrillo, New Hartford, and Richard W. Shepard, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Jun. 7, 1978, Ser. No. 913,341

Int. Cl.[2] D04B *35/04, 35/06*

U.S. Cl. 66—116 **3 Claims**



1. In a machine knitting needle with a tapered portion connecting the needle blade to the hook section, the improvement comprising: a hook integral with said tapered portion, said hook having a shank portion extending from the tapered portion of the needle, a curved portion having its entire outer surface curved and its entire inner surface curved and a portion overlapping the shank, said overlapping portion directly connected to the curved portion, at least a major longitudinal part of the overlapping portion having cross-sectional areas greater than the cross-sectional areas of the remainder of the hook, the outer surface and the inner surface of said major longitudinal part being substantially parallel, the width of the overlapping portion is at least as great as the width of the remainder of the hook, and the height of the overlapping portion is at least 1.20 times the median height of the shank portion of the hook.

4,210,004

BATCH WASHING MACHINES

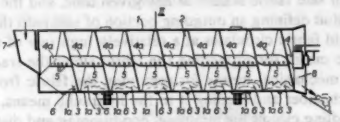
Karl-Heinz A. Stoll, Dreieich, and Heinz Miessler, Pattensen, both of Fed. Rep. of Germany, assignors to Vosswerke GmbH, Sarstedt, Fed. Rep. of Germany

Filed Oct. 11, 1978, Ser. No. 950,263

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745787

Int. Cl.[2] D06F *21/02, 37/08*

U.S. Cl. 68—27 **4 Claims**



1. In a batch washing machine of the type comprising an imperforate drum open at both ends and mounted for rotation about a substantially horizontal axis, a conveyor worm having a helical surface, said worm being rigidly mounted in the interior of the drum to divide same into a plurality of individual chambers, and a pipe disposed on the central axis of the drum for carrying washing media, said pipe being sub-divided into individual pipe portions by the helical surface of the conveyor worm, each said pipe portion including at least one outlet aperture, wherein the improvement comprises means

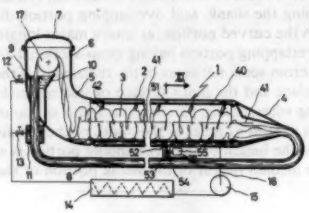
defining an imperforate worm surface and means defining at least one emptying aperture in the drum for each chamber and through which washing media can be discharged from the chamber, the washing media in each said chamber being isolated from the washing media in each other chamber, whereby mixing of washing media from one chamber with washing media in another chamber is prevented, the arrangement being such that washing is effected by partly rotating the drum with an alternating motion, and that transfer of washing from one chamber to a subsequent chamber is effected by rotation of the drum through 360°, said drum having a stop position at which the emptying apertures are located stationary at the bottom portion of the drum to permit draining of the washing media from the chambers prior to transfer of the washing from one chamber to a subsequent chamber.

4,210,005

APPARATUS FOR THE WET PROCESSING OF TEXTILE FABRICS IN ROPE FORM

Isidro F. Trullas, Tarrasa, Spain, assignor to Argelich, Termes y Cia., S.A., Tarrasa, Spain

Filed Apr. 12, 1979, Ser. No. 29,504
Claims priority, application Spain, Apr. 28, 1978, 469.262
Int. Cl.² D06B *3/24, 3/28*
U.S. Cl. 68—148 **9 Claims**



1. An apparatus for the wet processing of a textile fabric in endless rope form, said apparatus including means defining a closed circuit path for such a fabric and a portion of a processing bath absorbed and carried thereby, comprising a storage chamber and a transport conduit, the storage chamber defining a return portion of said path through which said fabric circulates at a relatively slow rate of travel and wherein a major portion of said fabric resides at any given time, and the transport conduit defining an outgoing portion of said path through which said fabric circulates at a relatively high rate of travel, hydraulic means for propelling the fabric along the transport conduit, mechanical means for removing the fabric from the storage chamber and feeding it to the hydraulic means, and a fluid handling circuit for pumping, conditioning and distributing the processing bath, characterized by:

(a) the storage chamber comprising a tubular body having two open ends and mounted for rotation about a longitudinal axis thereof,

(b) means for rotating said tubular body,

(c) the ends of said tubular body being disposed, respectively, proximate a leading end and a trailing end of said transport conduit, and

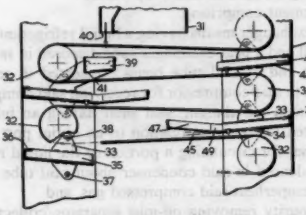
(d) means associated with said tubular body for advancing the fabric longitudinally therethrough in response to the rotation of said tubular body.

4,210,006

WASHING MACHINES FOR USE IN THE TEXTILE INDUSTRY

Alfred Thorpe, Bramhall, England, assignor to Sir James Farmer Norton & Co. Limited, Manchester, England

Filed Mar. 15, 1979, Ser. No. 20,691
Claims priority, application United Kingdom, May 25, 1978, 22568/78
Int. Cl.² D06B *1/06*
U.S. Cl. 68—205 R **11 Claims**



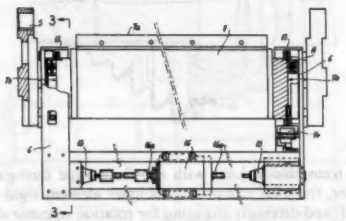
1. A washing machine including a pair of rows of vertically-spaced rotatable rollers adapted to constrain a web of fabric to be washed to follow a horizontally sinuous path, wash water supply means above the rollers for delivering wash water down onto the fabric, and perforated trays under certain rollers so that a roller and the perforated tray immediately therebeneath is separated during a washing operation by a run of fabric, characterised by: the perforated trays being compartmentalised at at least one transverse end thereof with the bottom of each compartment being perforated, the bottom perforation of each compartment being spaced inwardly from said one end of the tray relative to the bottom perforation of a corresponding compartment of a tray immediately thereabove, whereby water passing through each compartment, where there is no intervening fabric, flows inwardly in a stepwise manner from said one ends during its fall until it contacts fabric.

4,210,007

BENDING MACHINE

Alain J. Michel, Tassin la Demi Lune, France, assignor to Picot S.A., Tassin la Demi Lune, France

Filed Oct. 25, 1978, Ser. No. 954,599
Claims priority, application France, Oct. 28, 1977, 77 33340
Int. Cl.² B21D *11/04*
U.S. Cl. 72—8 **7 Claims**



1. A bending machine for bending a metal plate and the like, said bending machine including a frame having two lateral support posts, a horizontal table for supporting the plate to be bent mounted between said support posts, a plate clamping mechanism attached to said frame for clamping and immobilizing a plate to be bent on said horizontal support table, the front edge of said plate clamping mechanism serving to define the radius of curvature of the bend imparted to said metal plate,

two support arms, each of which is mounted pivotably on one of said support posts, said support arms holding between them a bending apron, and wherein the improvement comprises:

means for providing linear motion to said bending apron within said support arms;

first control means for controlling the direction and extent of the linear motion of said bending apron during the pivotal motion thereof in the course of bending said metal plate; and

second control means for synchronizing and equalizing the linear motion of opposite transverse ends of said bending apron;

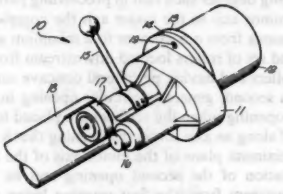
wherein said means for providing linear motion to said bending apron includes a lead screw mounted rotatably within each of said support arms, an internally threaded carrier moving on said lead screw and attached fixedly to one lateral extremity of said apron, and an electric motor for providing rotary motion to said lead screws; whereby, when said motor is turning, the lead screws are caused to rotate in synchronism, thereby providing axial motions to said carriers and thereby supplying linear motion to said bending apron while said second control means assure the synchronization of linear displacement of said carriers.

4,210,008

MACHINE FOR PINCH ROLLING, DEBURRING AND THE LIKE

Orville J. Birkestrand, 129A Casuda Canyon Dr., Monterey Park, Calif. 91754

Filed Jul. 3, 1978, Ser. No. 921,345
Int. Cl.² B21D *19/04*
U.S. Cl. 72—105 **5 Claims**



1. A machine for performing deburring, pinch rolling and like operations, particularly on tubular stock, comprising:

first means including a first elongated shaft supported with rotational freedom at least by bearings adjacent its two ends, said first means further including a first roller affixed to an end of said first shaft and drive means for rotating said first shaft and first roller;

second means including a second elongated shaft supported with rotational freedom at least by bearings adjacent its two ends, said second means further including third means for rotating said second shaft over a predetermined angle under control of an operator;

support and housing means for mounting said first and second shaft members in generally parallel relationship;

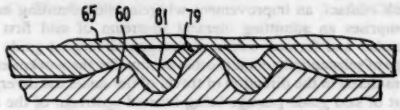
and fourth means including a third shaft rigidly affixed to the end of said second shaft adjacent said first roller and a second roller rotationally mounted on said third shaft, the axes of said second and third shafts being offset such that rotation of said shaft causes the clearance between the perimeters of said first and second rollers to be varied as said second shaft is rotated in response to operation of said third means.

4,210,009

REINFORCEMENT FIBRES

James D. Farfor, Brighton, and Huba Gall, Camberwell, both of Australia, assignors to Rocla Concrete Pipes Limited, Melbourne, Australia

Filed Mar. 16, 1978, Ser. No. 887,339
Claims priority, application Australia, Mar. 22, 1977, PC9514
Int. Cl.² B21D *28//06*
U.S. Cl. 72—186 **9 Claims**



1. A method of forming discontinuous fibres of material suitable for reinforcing concrete or other castable substance, comprising:

feeding a strip of said material having a thickness of about 0.025 inches or less longitudinally between a pair of slitting rollers having circumferentially extending intermeshing tongue and groove formations of rectangular configuration whereby to slit the strip longitudinally into strip segments each of segment width less than 0.10 inches, said strip segments moving from the slitting rollers as a pair of bands of strip segments defined by mutual lateral displacement between alternate strip segments across the strip and the intermediate strip segments due to penetration of the tongue formations into the groove formations;

feeding the bands of strip segments moving from the slitting rollers to a pair of severing devices while the strip segments of the band are still integrally attached to the feed strip; and

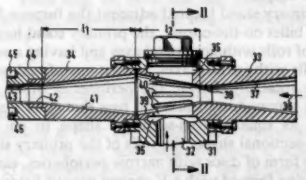
operating each severing device to transversely sever all of the strip segments of the respective band at regular intervals along the band whereby to divide them into discontinuous fibres and also simultaneously to deform the strip segments in the regions where they are severed in such a way that the discontinuous fibres have ends which are flattened and widened at their extremities and are longitudinally curved adjacent those extremities.

4,210,010

COOLING ARRANGEMENT

Constantin Vlad, Nordassel, and Hans Paulitsch, Bad Reichenhall, both of Fed. Rep. of Germany, assignors to Stahlwerke Peine-Salzgitter Aktiengesellschaft, Peine, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,890
Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822582
Int. Cl.² B21B *43/00, 45/02*
U.S. Cl. 72—201 **5 Claims**



1. In a cooling arrangement, particularly for cooling rolled stock including wires, rods and the like, having at least one unit comprising a first end member and a second end member which are longitudinally spaced from one another and which have respective axially aligned passages, a plurality of bars

connecting said end members and angularly spaced about the axis of alignment of said passages, said bars having first ends connected to said first end member on a first circle surrounding the passage of said first end member and also having second ends connected to said second end member on a smaller-diameter second circle surrounding the passage of said second end member, so that the space bounded by said bars converges from said first towards said second end member, and admitting means for admitting cooling fluid into contact with a workpiece travelling through said passages, and means for allowing the cooling fluid to escape between said bars subsequent to such contact, an improvement wherein said admitting means comprises an admitting element upstream of said first end member and formed with a convergent-divergent guide passage of substantially conical cross-section for the workpiece, as considered in the direction of travel of the same, the divergent part of said guide passage being located upstream of the convergent part thereof; and said fluid inlet means communicating with said guide passage and comprising a first wall bounding said passage and provided at said divergent part with a plurality of circumferentially spaced slot-shaped openings communicating with said divergent part and extending toward said convergent part, and a second wall surrounding said first wall and bounding therewith an annular fluid chamber communicating with said slot-shaped openings.

4,210,011

ROLLING MILL

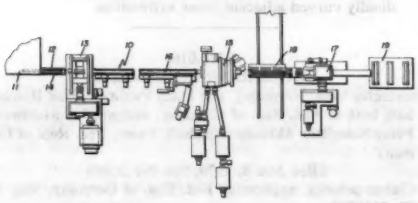
Erich Bretschneider, Meerbusch; Hermann Leitner, Langenfeld, and Friedhelm Böhmer, Neuss, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag AG., Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 866,795, Jan. 5, 1978, abandoned, which is a continuation of Ser. No. 796,312, May 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 675,478, Apr. 9, 1976, abandoned, which is a continuation of Ser. No. 567,607, Apr. 14, 1975, abandoned. This application Feb. 1, 1979, Ser. No. 8,285

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1974, 2418453

Int. Cl.[2] B21B *13/12*

U.S. Cl. 72—234 **4 Claims**



1. Rolling mill, comprising:

(a) a furnace for heating billets having a square cross-sectional shape,

(b) a primary stand located adjacent the furnace for receiving a billet on-the-corner, the primary stand having a first pair of rolls with horizontal axes and having a second pair of rolls with vertical axes, at least one of said pair of rolls being rotatably driven, the peripheries of all four rolls being grouped to form a roll pass that converts the billet from its square cross-sectional shape to an octagonal cross-sectional shape, the rolls of the primary stand being in the form of discs with narrow peripheries, each periphery being formed with a V-shaped groove having an angle of 135°, the edges of all rolls being beveled to provide a narrow slot-like space between adjacent, 90°-related rolls, and

(c) a secondary stand located in line with the primary stand, the secondary stand consisting of a planetary diagonal rolling mill including rolls which are driven independently of the driven rolls of said primary stand for converting the billet from the octagonal cross-sectional shape to a circular cross-sectional shape.

4,210,012

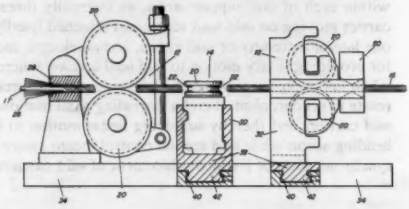
ROLL COMPACTING OF STRANDED CONDUCTOR

H. Clifford Dameron, Jr.; Guy E. Martin, both of Ross Township, Allegheny County, and Nicholaas L. Brouwer, Washington Township, Fayette County, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,307

Int. Cl.[2] H01B *13/00*; B21B *1/18*

U.S. Cl. 72—235 **2 Claims**



1. Apparatus for making compacted, helically stranded cable having a generally circular configuration in cross-section, the cable tending to rotate about its axis during the compacting process, the apparatus comprising:

a first set of rollers having peripheral concave surfaces providing a generally circular opening when the concave surfaces are disposed together, the contour of the concave surfaces being such that the opening is provided with a major and a minor axis perpendicular to each other across the cross-section of the opening, the concave surfaces of the rollers being effective to compact at least a portion of outside strands of cable passing through the opening but in varying degrees such that in proceeding peripherally from the minor axis to the major axis the compaction effected decreases from a maximum to a minimum amount, and

a second set of rollers located downstream from the first set of rollers and having peripheral concave surfaces providing a second, generally circular opening in line with the first opening when the surfaces are placed together, and a relief along an axis across the opening that is located in the approximate plane of the minor axis of the first opening,

the location of the second opening and its axis of relief downstream from the first opening being such that the outside strands of cable leaving the first opening in the vicinity of the minor axis thereof will enter adjacent the axis of relief in the second opening, the second set of rollers being effective to complete the compacting of the outer strands in a manner that provides a circular cable having a residual stress pattern that is substantially uniform throughout the cross-section of the cable.

4,210,013

PRESS WITH LOAD TRANSFER MECHANISM

Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.

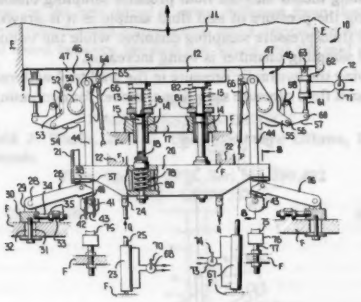
Filed Nov. 13, 1978, Ser. No. 959,117

Int. Cl.[2] B21D *22/20*

U.S. Cl. 72—347 **24 Claims**

1. For use in combination with a press of the type including a movable ram, a punch carried by said ram for movement therewith, and a die cooperable with said punch; a load transfer system for transferring a working load to said ram as a working force; said load transfer system comprising a load beam movable between a first position and a second position, a pad carried by said beam and movable within said die in coop-

eration with said punch, at least one lever at each end of said load beam pivotally mounted for swinging about a fixed pivot axis in response to movement of said load beam, and a load



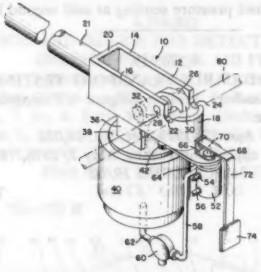
transferring linkage operatively connected to each lever and having means for connection to said ram to move said ram in response to movement of said load beam by said pad.

4,210,014

CABLE STRAIGHTENER

Robert K. Taylor, 1621 Moores Garden Rd., Mt. Vernon, Wash. 98273

Filed Nov. 6, 1978, Ser. No. 957,875
Int. Cl.² B21D *7/06*
U.S. Cl. 72—389 **8 Claims**



1. A cable straightener comprising:

cable support means including spaced cable receiving members for supporting a hand held bent portion of cable;

jaw means pivotally supported by said cable support means for pivotal movement to and from a position in which it bears against a bent portion of cable supported by said cable receiving members;

power actuation means mounted by said cable support means for causing pivotal movement of the jaw means; and

control means mounted on said cable support means for selectively controlling said power actuation means by operator contact while said cable is hand held on said receiving members and including contact means connected thereto for operating said control means by application of body pressure thereto;

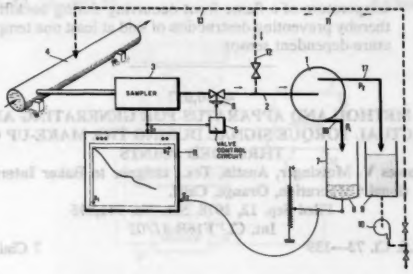
whereby straightening force to be applied to a bent portion of cable may be controlled by an operator while the bent portion of cable is hand held.

4,210,015

DEVICE FOR FOLLOWING THE VARIATIONS IN THE COMPOSITION OF A FLOWING HETEROGENEOUS LIQUID MIXTURE

Jean-Paul Euzen, Ecully, and Patrick Scemama, Paris, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Societe Anonyme Pipe Line Service, Puteaux, both of, France

Filed Dec. 18, 1978, Ser. No. 970,306
Claims priority, application France, Dec. 19, 1977, 77 38561
Int. Cl.² G01N *11/00*
U.S. Cl. 73—61.1 R **13 Claims**



1. A device for following the variations in the composition of a flowing heterogeneous mixture of at least two liquid phases incompletely miscible with each other, the device comprising:

(a) means for sampling an adjustably selected amount of the flowing mixture to provide a sample thereof,

(b) means for measuring the amount of said sample,

(c) means connected to said sampling means, for separating at least one liquid phase from said sample of the mixture,

(d) means for measuring the amount of the so-separated liquid phase,

(e) means for displaying the measured values of the amounts of said sample of mixture and of said separated liquid phase, said displaying means being connected to both of said amount measuring means, and, means for recycling at least one liquid phase issuing from said separating means, said recycling means being connected to said separating means and to the flow of heterogeneous mixture downstream of the point where said sampling means is connected to said flow.

4,210,016

FLOW RATE METER WITH TEMPERATURE-DEPENDENT RESISTOR

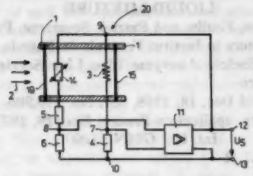
Cornelius Peter, Stuttgart, and Bernd Kraus, Gerlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 935,056
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1977, 2749575
Int. Cl.² G01F *1/68*
U.S. Cl. 73—116 **5 Claims**

1. A flow rate measuring device for measuring the flow of induced air in the induction tube of an internal combustion engine including at least one temperature-dependent sensor in said induction tube, the resistance of which is related to the flow rate to be measured, and wherein the improvement comprises:

a first grating, disposed in said induction tube downstream of said at least one temperature-dependent sensor, said first grating being substantially plate-like, the plane of said grating being substantially transverse to the direction of flow of said induced air and the structure of said first

grating being such as to permit substantially unimpeded flow of said induced air therethrough and to reduce the



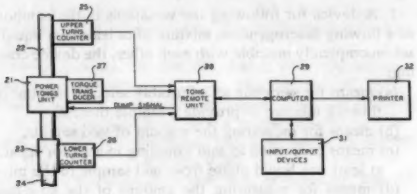
temperature of a flame front occurring during backfiring thereby preventing destruction of said at least one temperature-dependent sensor.

4,210,017

METHOD AND APPARATUS FOR GENERATING AN ACTUAL TORQUE SIGNAL DURING THE MAKE-UP OF THREADED JOINTS

James V. Motsinger, Austin, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Sep. 12, 1978, Ser. No. 941,895
Int. Cl.³ F16B *31/02*
U.S. Cl. 73—139 **7 Claims**



6. A method of generating a signal representing the actual torque applied to the rotated member of a pair of cooperatively threaded members during the making of a threaded joint comprising the following steps: (a) generating a signal having a magnitude representing the applied torque; (b) generating an offset applied torque signal representing the sum of the magnitude of said applied torque signal and an offset signal having a magnitude of a predetermined value; (c) storing the magnitude of said offset applied torque signal representing zero applied torque; and (d) generating the actual torque signal with a magnitude representing the magnitude of the difference between the magnitude of said offset applied torque signal and the magnitude of said stored signal.

4,210,018

FORMATION TESTERS

Emmet F. Brieger, Nogal, N. Mex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed May 22, 1978, Ser. No. 908,579
Int. Cl.² E21B *49/00*
U.S. Cl. 73—155 **17 Claims**

1. A method for use in obtaining multiple pressure tests of an earth formation traversed by a well bore by use of a sidewall fluid sampler well tool which has a fluid pressure sampling chamber in the well tool in open fluid communication with a pad sealing means, compromising the steps of:

for one selected level in a well bore, moving a pad sealing means on the well tool into engagement with the wall of a well bore and isolating a wall segment of the earth formation;

after the pad sealing means engages the wall segment of the earth formation, generating a hydraulic pressure in the well tool and applying said hydraulic pressure to said fluid pressure sampling chamber for increasing the volume of said fluid pressure sampling chamber thereby to draw a fluid sample from the earth formation engaged by the pad sealing means into the fluid pressure sampling chamber,

sensing the pressure of said fluid sample as it is drawn into the fluid pressure sampling chamber while the volume of the sampling chamber is being increased,

relieving the hydraulic pressure in the well tool with respect to said fluid pressure sampling chamber for decreasing the

volume of said fluid pressure sampling chamber thereby to contract the sampling chamber to discharge the fluid sample through the pad sealing means;

retracting the sealing pad means and, after retraction of sealing pad means from engagement from the wall of the well bore, moving the well tool to a second location at another level in the well bore and,

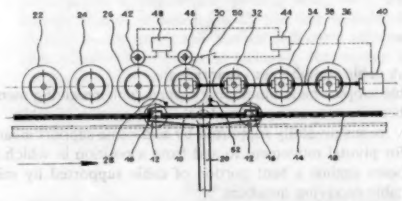
at the second location, repeating the steps of the method performed at the one selected level for obtaining another fluid sample and pressure sensing at said second location.

4,210,019

OVERHEAD CABLE TRANSPORT TESTING

Roger Laurent, Chambery, France, assignor to Pomagalski S.A., Fontaine, France

Filed Apr. 27, 1979, Ser. No. 34,026
Claims priority, application France, May 2, 1978, 78 13032
Int. Cl.² G01M *19/00*
U.S. Cl. 73—158 **7 Claims**



1. An overhead cable transport installation, including at least one detachable grip carriage for coupling a gondola on to the cable, a device to accelerate and synchronize the said carriage prior to its coupling on the cable having at least one synchronizing wheel engaging the said carriage by friction in the area above the coupling point, and rotated at a tangential speed synchronous with that of the cable and a device for testing the clamping of the said grip below the said coupling point able to exert on the said carriage coupled on the cable a braking or accelerating force, the said device for testing the clamping including at least one test wheel able to engage the said car-

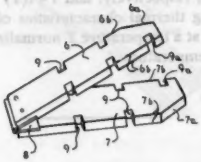
riage by friction, a means of rotating the said test wheel to drive it at a speed synchronous with that of the cable before the engagement of the said carriage on the said wheel, and of exerting on the said test wheel an opposing force tending to impose on the test wheel a speed different from that of the cable during the said engagement, and a detector of the differential speed between the said test wheel and the said cable.

4,210,020

PASTA TESTING DEVICE

Ronald J. Wasik, 2880 E. Cedarwood Dr., Ottawa, Ontario, Canada

Filed Apr. 24, 1978, Ser. No. 899,492
Int. Cl.[2] G01N *33/10*
U.S. Cl. 73—169 **6 Claims**



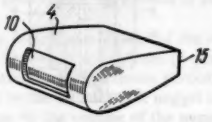
1. A pasta testing device comprising a pair of flat elongate transparent plates wherein opposite sides of said plates stand normal to the flat surfaces and have edges that are sufficiently clean and sharp to impinge the softened hydrated surface of a transversely disposed strand of pasta to deter the longitudinal movement of such strand and wherein the sides of said plates are notched to provide accommodating seats for the depending and reaches of a transversely disposed strand of softened hydrated pasta to deter the unwanted sliding of the strand longitudinally off the plates.

4,210,021

METHOD AND DEVICE FOR DETECTING ICING OF OBJECTS FOUND IN AIR FLOW

Nikolai A. Vykhodtsev; Tatyana P. Vykhodtseva, Leninsky prospekt, 70/11 kv. 293; Viktor I. Bantsekin, Snezhnaya ulitsa, 7, kv. 8; Boris K. Borisov, Dmitrovskoe shosse, 89, korpus 1, kv. 66, and Oleg P. Grishin, Yasny proezd, 30, korpus 1, kv. 45, all of Moscow, U.S.S.R.

Filed Jul. 6, 1978, Ser. No. 922,586
Int. Cl.[2] G01W *1/00*
U.S. Cl. 73—170 R **5 Claims**



1. A method for detecting icing of objects found in an air flow containing supercooled droplets of water, which method comprises the following operations:

producing a zone of precipitation of supercooled droplets of water in the air flow;

simultaneously producing a zone in said air flow, which is protected from precipitation of supercooled droplets of water and in which natural turbulization of said air flow takes place;

decelerating said air flow in said zone of precipitation of supercooled droplets of water with working surfaces having a predetermined configuration including a recess in a first end surface cooperating with an identical rear end surface having also a recess;

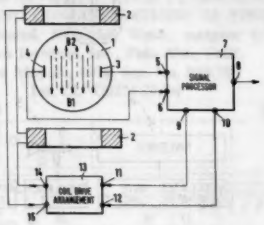
measuring the difference of temperatures in said zones, which difference is indicative of the icing conditions, said measuring step being independent of altitude and speed of the air flow.

4,210,022

METHOD FOR THE INDUCTIVE MEASUREMENT OF FLUID FLOW

Jurg A. Boss, Arlesheim, Switzerland, assignor to Flowtec AG, Reinach, Switzerland

Filed Sep. 20, 1978, Ser. No. 944,030
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744845
Int. Cl.[2] G01F *1/58*
U.S. Cl. 73—861.17 **1 Claim**



1. A method for inductive flow measurement by generating a magnetic field in a direction perpendicular to the flow and measuring the signal voltage induced by the flow across a pair of electrodes, comprising the steps of generating a periodically reversed magnetic field comprising field impulses of opposite polarity separated by magnetic field intervals in which the magnetic field has zero value, generating during a compensation time interval within each of said magnetic field intervals a compensating voltage of a magnitude and polarity adapted to compensate the disturbance voltage existing across said electrodes during said compensation time interval to zero value, storing said compensating voltage until the next compensation time interval and employing said stored compensating voltage for compensating the disturbance voltage contained in said signal voltage, sampling said signal voltage at a sampling time interval within each of said magnetic field impulses, each of said sampling time intervals having the same time distance from the preceding compensation time interval, and forming the difference of the signal voltage values sampled at successive sampling time intervals.

4,210,023

METHOD AND APPARATUS FOR MEASURING SLAG FOAMING USING MICROWAVE LEVER METER

Yoshiyasu Sakamoto, Kaizuka; Sumio Kobayashi, Yamato Kohriyama, and Akio Hatono, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,573
Claims priority, application Japan, Mar. 25, 1977, 52/32835
Int. Cl.[2] G01F *23/00*
U.S. Cl. 73—290 R **18 Claims**

1. A method for measuring the slag foaming level within a converter during a blowing operation, said method comprising the steps of:

generating frequency modulated microwaves having a predetermined frequency change rate;

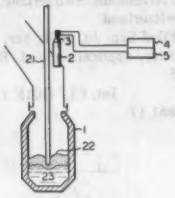
emitting said microwaves toward a slag foaming surface within a converter;

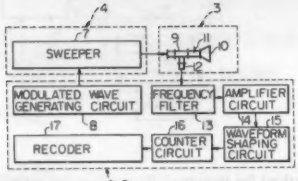
providing a reference reflector in the path of said emitted microwaves at a position a predetermined distance from the point of emission of said microwaves;

reflecting a first portion of said microwaves from said reference reflector;

reflecting a second portion of said microwaves from the slag foaming surface;

receiving and mixing said first portion of microwaves reflected from said reference reflector and said second portion of said microwaves reflected from the slag foaming surface, thereby producing a beat signal;





detecting said beat signal;

determining a distance between the slag foaming surface and said reference reflector from said detected beat signal, thereby providing a measure of the slag foaming level.

4,210,024

TEMPERATURE MEASUREMENT APPARATUS

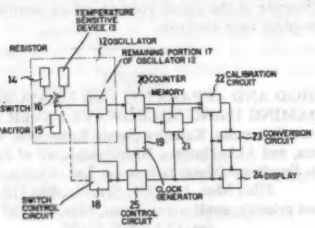
Hiromasa Ishiwatari, Ikoma, and Yoshinori Yamada, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 29, 1978, Ser. No. 964,520

Claims priority, application Japan, Dec. 5, 1977, 52/146295

Int. Cl.[2] G01K *1/20*

U.S. Cl. 73—362.5 **3 Claims**



1. A temperature measurement apparatus comprising:

a temperature sensitive device;

an electric circuit for producing output signals responding to electrical states of said temperature sensitive device;

a reference resistor of a known temperature coefficient which is connected in said electric circuit to produce a reference output signal at a predetermined reference environmental temperature and at a reference voltage of a power source;

a memory for memorizing said reference output signal;

a control circuit for alternatively switching to produce output signals for said temperature sensitive device and for said reference resistor; and

a calibration circuit for calibrating a measurement error due to variation from said environmental temperature and a power source voltage by use of said memorized reference output signal and said output signals for said temperature sensitive device and said reference resistor,

said calibration circuit for performing an arithmetic calculation

$$Vm \cdot \frac{Vc_0}{Vc} \cdot \frac{1}{1+f(T)}$$

where Vc_O is said reference output signal, Vc and Vm are said output signals for said reference resistor and said temperature sensitive device, respectively, and $1+f(T)$ represents a function representing thermal characteristics of said temperature sensitive device at a temperature T normalized with respect to said reference temperature.

4,210,025

PNEUMATIC COMPENSATOR FOR A FLUID SAMPLING CELL

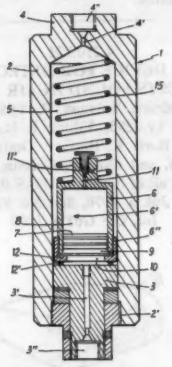
Jean-Pierre Bimond; Flavien Lazarre, both of Pau, and André Puyau, Lescar, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris, France

Filed Jan. 3, 1979, Ser. No. 662

Claims priority, application France, Jan. 4, 1978, 78 00122

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—421 R **6 Claims**

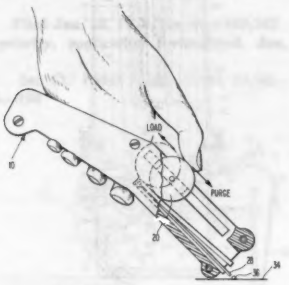


1. A device for limiting during handling the pressure of a fluid sample occupying a volume in a space within a cell, comprising an enclosure with an auxiliary volume, variable between a zero volume and a maximum volume, located in the inner space of the cell, said auxiliary volume being complementary to the volume occupied by the fluid sample, said auxiliary volume containing a gas under pressure, selected from the group of the gases the critical temperature of which is lower than the lowest possible temperature likely to occur during the handling, the value of the auxiliary volume, occupied by said gas under given temperature and pressure conditions, being selected in such a way that, for various temperature values, the sample pressure is always higher than the bubble or dew pressure of said sample, and the gas under pressure is a tracer gas which is not present in the samples likely to be stored in the cell.

4,210,026
BLOOD SAMPLE COLLECTING MEANS

Lynn G. Amos, Painted Post; Charles M. Beechey, Pine City, and Charles H. Rogers, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 29, 1978, Ser. No. 386
Int. Cl.[2] B01L *3/02*
U.S. Cl. 73—425.6 12 Claims



1. Means for collecting a blood sample for subsequent treatment or analysis, comprising:

a housing adapted to be gripped in the hand of a user and defining a support surface therein;

pinching means hingedly disposed within said housing and extending generally parallel to said support surface;

a resilient envelope removably disposed between said pinching means and said support surface; and

a rotatable wheel movably retained within said housing adjacent said pinching means and manually translatable along said pinching means for advancing said pinching means toward said support surface thereby compressing said resilient envelope and for retreating along said pinching means whereby said envelope is decompressed.

4,210,027
METHOD FOR DETERMINATION AND GRADING OF PRECIOUS MINERALS

James A. Patterson, Los Altos, Calif., assignor to Specific Volume Systems, Inc., Mountain View, Calif.

Filed Nov. 13, 1978, Ser. No. 959,673
Int. Cl.[2] G01N *33/20*
U.S. Cl. 73—432 R 1 Claim

1. A method of determining the amount of gold in a nugget comprising:

a. measuring the weight and volume of the nugget;

b. determining the weight and volume of quartz in the nugget by calculating the approximate percentage of surface area of quartz on the surface of the nugget and multiplying this percentage by the volume of the nugget wherein the surface area of the quartz to the surface area of the entire nugget is determined by:

1. placing the nugget face down on a piece of carbon paper overlaying a square-ruled paper;
2. tracing the outline of the nugget face onto carbon paper which forms an outline of the face of the nugget on the square-ruled paper;
3. tracing the outline of the quartz area on the nugget face using substantially transparent tracing paper;
4. transferring the outline on the tracing paper to the square-ruled paper through the carbon paper;
5. comparing the area of the nugget surface with the area of the quartz; and
6. repeating steps 1–5 for each face of the nugget and averaging the calculated values;

c. subtracting the volume and weight of the quartz from the volume and weight of the total nugget to yield the specific gravity of gold alloy within the nugget;

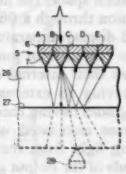
d. estimating the percentage of copper, silver and nickel alloyed with the gold in the nugget; and

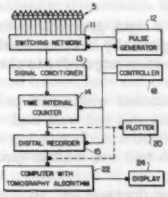
e. comparing the specific gravity of the alloy with the percentage of copper, silver and nickel to yield the total amount of gold.

4,210,028
METHOD AND APPARATUS FOR ULTRASONICALLY MEASURING CONCENTRATIONS OF STRESS

B. Percy Hildebrand, Richland, Wash., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 30, 1978, Ser. No. 910,788
Int. Cl.[2] G01N *29/04*
U.S. Cl. 73—598 10 Claims





9. An apparatus for ultrasonically measuring stress concentrations in an object of interest, comprising:

(a) an ultrasonic transducer array for propagating acoustic waves in an object of interest along a plurality of determinable directions and from a plurality of determinable positions;

(b) means for measuring the time of flight of the acoustic waves within the object of interest along the determinable directions and from the determinable positions; and

(c) means for determining from said time of flight measurements any variations in the acoustic velocity of the acoustic waves within the object of interest and for converting said variations in velocity into a map of stress concentrations in the object of interest, said means for determining dividing the object of interest into a plurality of cells and solving the following set of equations for V_j, the acoustic velocity within each cell:

$$(T_i) = \sum_j \frac{L_{ij}}{V_j} + \frac{1}{V_\omega}\left(L - \sum_j L_{ij}\right)$$

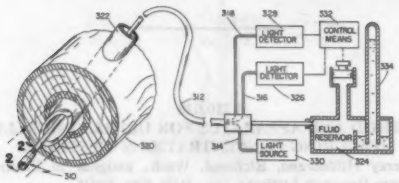
where T_i = total time of flight along i^{th} ray
V_j = velocity in j^{th} cell
V_ω = velocity in coupling medium
L = total geometric path length
L_{ij} = path length of the i^{th} ray in the j^{th} cell

4,210,029

DIFFERENTIAL FIBER OPTIC DIFFERENTIAL PRESSURE SENSOR

John H. Porter, Colchester Point, Vt., assignor to Lad Research Industries, Inc., Burlington, Vt.

Filed May 4, 1979, Ser. No. 36,246
Int. Cl.[2] G01L 7/08, 9/00
U.S. Cl. 73—705 4 Claims



1. In apparatus for monitoring ambient pressure within a confined sapce wherein an envelope having a flexible wall is so placed that said wall will move in response to pressure change within such space, the interior of said envelope being in communication through a fluid line with differential pressure control and display apparatus, and wherein one input light guide and two output light guides are introduced through said line and have their internal ends within said envelope, the input guide having its external end facing a light source and the output guides having their external ends facing light detectors, and means associated with the flexible wall for selectively reflecting light from the inner end of the input guide to the inner ends of the output guides in accordance with movements of said wall in response to changes in relative pressure between that in the envelope and that in the confined space, the improvement wherein

said envelope comprises a rigid, generally cylindrical wall closed at one end by a generally circular, flexible end wall movable in an axial direction responsive to changes in said relative pressure,

said light guides are positioned within said envelope with their internal ends facing said end wall, and

said end wall carries a reflective surface facing said internal ends and movable with said end wall toward and away from said internal ends,

said internal ends being so disposed and arranged with respect to said reflective surface that when said surface is close to said internal ends a greater intensity of light from the input guide will be reflected by the surface to one of said output guides for sensing by its light detector, when said surface is remote from said internal ends, a greater intensity of said light will be reflected by said surface to the other of said output guides for sensing by its light detector, and, when said surface is in a position between said close and remote positions the reflected light will be equally intense, for correspondingly actuating said differential control and display apparatus.

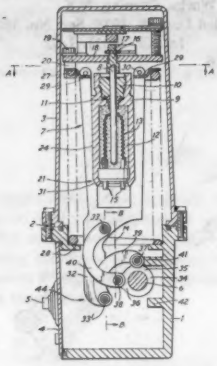
4,210,030

SERVO MOTOR

Jens N. Andresen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Apr. 20, 1978, Ser. No. 898,100
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717468
Int. Cl.[2] F16H 21/18; F01B 29/10; F02G 1/04
U.S. Cl. 74—43 4 Claims

1. A servo motor assembly, comprising, a frame, two relatively movable motor parts with a movable part thereof having movement along a straight line parallel to a reference line which is fixed relative to said frame, a rotatable member rotatably mounted relative to said frame about an axis on one side of said reference line, said rotatable member having two angularly displaced pivots at equal radii from said axis of said rotatable member, said reference line being a distance from said axis greater than said radii, said movable part having two pivots spaced from each other and equally spaced from said reference



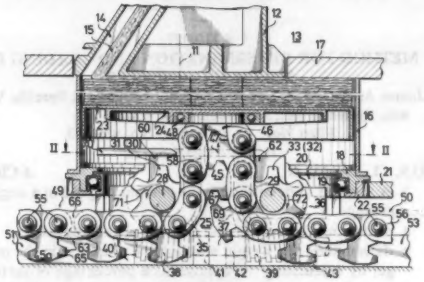
line on the side thereof opposite from said rotatable member pivots, and two links intersectingly connected respectively between the pivots of said motor movable part and said pivots of said rotatable member.

4,210,031

LIFTING OR PRESSING DEVICE

Reinhold Schmid, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Mar. 7, 1978, Ser. No. 884,117
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710194
Int. Cl.[2] F16G 13/02
U.S. Cl. 74—89.21 8 Claims



1. Lifting or pressing device comprising means for transmitting thrust, and a compressive force-transmitting radially stationary push rod shiftable by said thrust transmitting means, said push rod being formed of individual elements form-lockingly clampable one to another, said individual elements being fittable with a pressure-proof, bending-proof and buckling-proof fit into one another in direction of thrust by said thrust transmitting means, and being releasable only in a direction opposite the direction of thrust and being divertable out of the direction of thrust, said individual elements being connected articulatingly to one another into at least two chains, respectively, two chains feedable from different directions being divertable by said thrust transmitting means into the direction of thrust, said chains having clamping members alternatingly clampable one to the other for fitting said individual elements into one another, said individual elements of said chains having

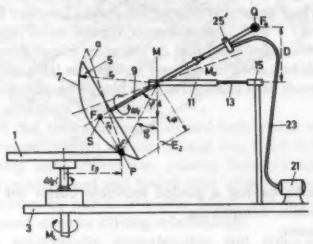
at least part of an outer strap covering the respective clamping members.

4,210,032

TORQUE CONVERTER ESPECIALLY FOR THE USE IN ELECTRO MOBILS

Heinz Lampert, Fuchsbühelstrasse 50, CH-9470Buchs, Switzerland

Filed Jun. 28, 1978, Ser. No. 919,767
Claims priority, application Switzerland, Jun. 29, 1977, 8017/70
Int. Cl.² F16H *15/26, 15/00, 13/00*
U.S. Cl. 74—198 58 Claims



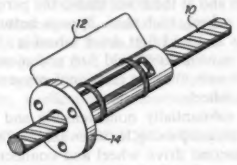
1. A torque converter for automatically adjusting its step down ratio according to load variations, comprising; a first and a second friction wheel in contact with each other, the first wheel being a ruled surface wheel with axially varying radius, the rotational axis of both wheels being suspended so as to be tiltable relative to each other in two directions, a first direction in a plane formed by the two axes to alter the step down ratio by altering the friction radius of the first wheel, a second direction at least partly in direction of the circumferential speed of the wheels at their frictional area to bring said two axes out of in-plane alignment, force generating means acting on one of said two axes to prevent tilting in said second direction by the transmitted friction force, said force generating means being of spring characteristic and including a force converter to control the generated force in dependency of the tilting position in said first direction to thus meet the friction force at different step down ratios.

4,210,033

ANTI-BACKLASH NUT

Kenneth W. Erikson, Merrimack, and Keith W. Erikson, Nashua, both of N.H., assignors to Kerk Motion Products, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 816,983, Jul. 19, 1977, abandoned. This application May 19, 1978, Ser. No. 907,518
Int. Cl.² F16H *55/18*
U.S. Cl. 74—424.8 A 8 Claims



1. An anti-backlash nut designed to undergo translational movement along a screw having an external thread thereon in response to relative rotational movement between the anti-backlash nut and screw, said nut having a hollow cylindrical bore with an internal thread complementary to the external thread on the screw and said nut comprising, in combination:

a. a continuous portion extending longitudinally from one end of said nut to the other and thereof;

b. oppositely-directed longitudinal flexure members, said flexure members having one end fixed to said anti-backlash nut and their other end free-floating; and,

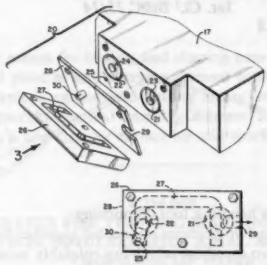
c. means for biasing said oppositely-directed longitudinal flexure members towards the external thread of said screw.

4,210,034

CHANNEL PLATE FOR AUTOMATIC TRANSMISSIONS

Gilbert W. Younger, 2621 Merced Ave., El Monte, Calif. 91733

Filed Aug. 15, 1977, Ser. No. 824,331
Int. Cl.² F16H *57/02*
U.S. Cl. 74—606 R 2 Claims



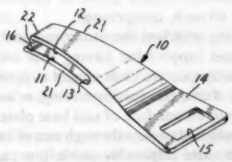
1. In an automatic transmission for shifting gears, a channel plate for blocking transmission oil flow between two shift valves normally provided to effect automatic sequential shifting with changes in the pressure of said transmission oil so that the gears in said transmission can only be shifted manually, said two shift valves being receivable in side-by-side valve bores in the valve body for said automatic transmission, said bores normally being covered by a valve cover having an internal passage placing said bores in communication with each other and with the transmission oil, said channel plate comprising a thin metal member insertable between said valve cover and entrances to said bores to eclipse said passage so that oil flow through said passage is blocked, said metal member further including a side notch placing one of said bores in communication with the exterior of said valve body and an elongated opening placing the other of said bores in communication with said transmission oil.

4,210,035

BOOT BUCKLING AID

Carl A. White, 41 Woodland Dr., Fargo, N. Dak. 58102

Filed Nov. 9, 1978, Ser. No. 959,291
Int. Cl.² B25B *27/00*
U.S. Cl. 81—3 R 5 Claims



1. A device for aiding the opening and closing of boot buckles, wherein said boot buckles comprise a tensioning lever having a curve therein to conform to the surface of said boot

when said buckle is closed, said tensioning lever pivotally attached to one instep portion of said boot and a clamping loop engageable with said lever attached to the other instep portion of said boot, said device comprising an elongated member having a handle end for grasping said member and a bifurcated gripping end having rigid, spaced upper and lower segments, said upper and lower segments being curved to engage a substantial portion of said tensioning lever to facilitate operation of said clamping loop.

4,210,036

TIRE-CHAIN HANDLING TOOLS

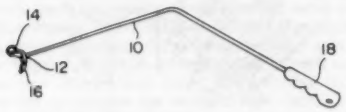
Kunii Nakata, Naganoshi, Japan, assignor to Nakata Giken Co., Ltd., Naganoken, Japan

Filed Jan. 12, 1978, Ser. No. 868,915

Claims priority, application Japan, Oct. 15, 1977, 52/138303[U]; Dec. 8, 1977, 52/164788[U]

Int. Cl.[2] B60C *25/14*

U.S. Cl. 81—15.8 **6 Claims**



1. A tire-chain handling tool comprising:

a rod including two portions connected together by a hinge including two members which are rotatably secured relative to each other;

a hook member including a pulling hook and a pushing hook connected to one outer end of said rod; and

a handle member connected to the other outer end of said rod.

4,210,037

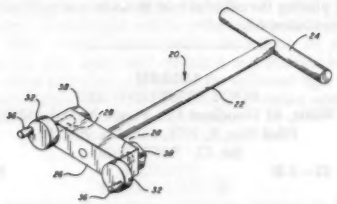
SPANNER WRENCH

Alfred Taylor, 508 Budd St., Elmira, N.Y. 14904

Filed Aug. 28, 1978, Ser. No. 937,551

Int. Cl.[2] B25B *13/48*

U.S. Cl. 81—90 C **4 Claims**



1. A spanner wrench, comprising:

a handle having attached thereto at one end thereof a support bar; said support bar having first and second holes therein near respective ends of said support bar; and

an adjustable drive pin carrier having a base plate and a mounting bolt on one face of said base plate said mounting bolt being adapted to pass through one of said holes in said support bar, said adjustable drive pin carrier having a drive pin mounted on a second base of said base plate near an edge of said base plate opposite a point where said mounting bolt is affixed, to achieve a greatest possible span adjustment.

4,210,038

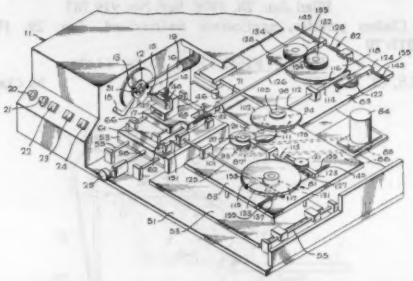
LATHE HAVING A GUIDED MOVABLE CUTTER

Edward G. Hill, San Diego, Calif., assignor to Continuance Curve Contact Lenses, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 812,768, Jul. 5, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,165

Int. Cl.[2] B23B *3/28, 5/40*

U.S. Cl. 82—11 **17 Claims**



1. A lathe having a guided movable cutter for surfacing contact lenses, comprising:

base means;

a motor secured to said base means;

collet means driven by said motor and adapted to releasably retain a cylindrical lens blank for rotation therewith;

a first stage supported on said base means for movement thereon parallel to the axis of rotation of said collet means

a second stage mounted to said first stage for movement thereon perpendicular to the axis of rotation of said collet means;

a cutting tool mounted to said second stage;

radius-generating drive means comprising,

first and second coaxial drive wheels mounted to said base for rotation in concert thereon;

first and second idler wheels adjacent to and substantially coplanar with said first and second drive wheels, respectively;

means for mounting said first and second idler wheels to said base and urging them radially toward said first and second drive wheels, respectively;

first rod means mounted to said base means for reciprocating axial movement, passing between said first drive wheel and said first idler wheel and held therebetween by said first idler wheel;

second rod means mounted to said base means essentially parallel to the axis of said lens blank for reciprocating axial movement, passing between said second drive wheel and said second idler wheel and held therebetween by said second idler wheel, and engaging said first stage in driving relationship;

first substantially nonextensible and noncompressible band means passing between said first rod means and said first drive wheel and connected at one end to said first rod means and at the other end to the periphery of said first drive wheel, such that slippage between said first rod means and said first drive wheel is eliminated and the axial movement of said first rod means is transformed into corresponding rotational movement of said first drive wheel;

second substantially nonextensible and noncompressible band means passing between said second rod means and said second drive wheel and connected at one end to said second rod means and at the other end to the periphery of said second drive wheel such that slippage between said second drive wheel and said second rod means is eliminated and the rotational movement of said second drive wheel is transformed into corresponding axial movement of said second rod means;

means for imparting a desired pattern of axial motion to said first rod means;

whereby said axial motion of said first rod means is accurately transferred through said first drive wheel, said first and second band means, said second drive wheel and said second rod means, to said first stage, effectively driving said first stage axially with respect to said lens blank;

cross-feed drive means comprising,

third and fourth coaxial drive wheels mounted to said base for rotation in concert thereon;

third and fourth idler wheels adjacent to and substantially coplanar with said third and fourth drive wheels, respectively;

means for mounting said third and fourth idler wheels to said base and urging them radially toward said third and fourth drive wheels, respectively;

third rod means mounted to said base means for reciprocating axial movement, passing between said third drive wheel and said third idler wheel and held therebetween by said third idler wheel;

fourth rod means mounted to said base means essentially perpendicular to the axis of said lens blank for reciprocating axial movement, passing between said fourth drive wheel and said fourth idler wheel and held therebetween by said fourth idler wheel, and engaging said second stage in driving relationship;

third substantially nonextensible and noncompressible band means passing between said third rod means and said third drive wheel and at the other end to the periphery of said third drive wheel, such that slippage between said third rod means and said third drive wheel is eliminated and the axial movement of said third rod means is transformed into corresponding rotational movement of said third drive wheel;

fourth substantially nonextensible and noncompressible band means passing between said fourth rod means and said fourth drive wheel and connected at one end to said fourth rod means and at the other end to the periphery of said fourth drive wheel such that slippage between said fourth drive wheel and said fourth rod means is eliminated and the rotational movement of said fourth drive wheel is transformed into corresponding axial movement of said fourth rod means;

means for imparting a desired pattern of axial motion to said third rod means;

whereby said axial motion of said third rod means is accurately transferred through said third drive wheel, said third and fourth band means, said fourth drive wheel and said fourth rod means, to said third stage, effectively driving said second stage axially with respect to said lens blank and

motor means associated with, and effectively synchronously driving said radius-generating drive means and said cross-feed drive means.

4,210,039

APPARATUS FOR FORMING NON-CIRCULAR WORKPIECES

Paul Willemin, Bassecourt, Switzerland, assignor to Willemin Machines S.A., Canton of Berne, Switzerland

Continuation-in-part of Ser. No. 776,440, Mar. 11, 1977, abandoned. This application Oct. 10, 1978, Ser. No. 949,508

Claims priority, application Switzerland, Mar. 11, 1976, 3025/76

Int. Cl.[2] B23B *3/28*; B24B *5/00, 7/00*

U.S. Cl. 82—18 **5 Claims**

1. An apparatus for forming a non-circular workpiece surface comprising:

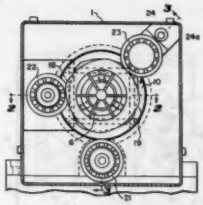
a workpiece;

workpiece cutting means;

a rotatable workpiece carrying element, said workpiece mounted on said carrying element, and said carrying element and workpiece being laterally displaceable as said carrying element rotates;

said workpiece carrying element including at least a first cam surface thereon bearing against a fixed roller bearing as said carrying element rotates;

said carrying element further including shaping cam means; and



biasing means for biasing said shaping cam means against a fixed point as said carrying element rotates to guide said workpiece against said cutting means and laterally shift said workpiece and carrying element as they rotate to form a non-circular surface on said workpiece.

4,210,040

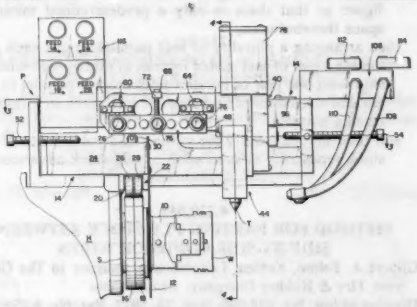
APPARATUS FOR TURNING MACHINES AND THE LIKE FOR SIMULTANEOUS AXIAL AND RADIAL PROFILING OF WORK

Ivan R. Brown, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,001

Int. Cl.[2] B23B *3/28*

U.S. Cl. 82—19 **35 Claims**



1. In a turning machine having a tool for simultaneous axial and radial profiling of work:

(a) a rotatable spindle having a forward end and having work support means on said forward end;

(b) circumferential profiling means rotatably mounted on said spindle;

(c) a carriage support mounted on said machine adjacent said spindle;

(d) a movable tool support carrier on said carriage support movable in a direction generally parallel to said spindle axis;

(e) a tool holder mounted in said tool support carrier for movement parallel to and radially of said spindle axis;

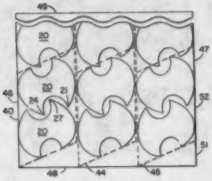
(f) said tool holder including longitudinal profiling means;

(g) tracking means mounted between said circumferential profiling means and said longitudinal profiling means and simultaneously tracking both of said profiling means.

4,210,041
METHOD FOR CUTTING A PLURALITY OF IDENTICAL, IRREGULAR, NON-POLYGONAL PIECES FROM MATERIAL WITH MINIMUM WASTE

Enrique Mitman, Brookline, and Isaac Sadovnik, Cambridge, both of Mass., assignors to Enrique Mitman, Brookline, Mass.

Filed Feb. 8, 1979, Ser. No. 10,366
Int. Cl.[2] B26F *1/38*
U.S. Cl. 83—32 6 Claims



3. A method of simultaneously cutting a plurality of identical irregular shaped objects of rounded outline from advancing sheet or web, stock having opposite parallel side edges to reduce stock waste comprising the steps of:

creating a multiple repeat gang cutter pattern by marking a plurality of salient points around each of the sides of at least one of said objects of rounded outline and drawing a straight line joining each adjacent pair of said points to box said object into a closed geometrical, straight-sided, polygonal figure including a triangle, parallelogram or trapezoid;

combining a pair of said closed polygonal figures into a parallelogram with a side of one figure, having at least one said salient point forming a projection, positioned opposite a side of the other figure of the pair having at least two salient points forming a recess therebetween,

reducing the area of said parallelogram by nesting the projection on one said figure in the recess in the other said figure so that there is only a predetermined minimum space therebetween,

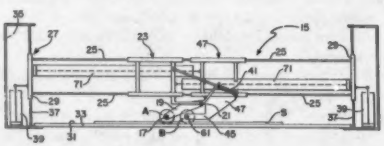
then arranging a plurality of said parallelograms each containing a pair of said nested figures, in side by side relationship with one pair of parallel sides thereof parallel to said parallel side edges of said sheet or web stock to form a die cutting pattern

and then simultaneously die cutting said pattern out of said stock repeatedly in succession as said stock advances.

4,210,042
METHOD FOR PARTING PLY STOCK BETWEEN SIDE-BY-SIDE CORDS OR WIRES

Gilbert A. Felten, Kehlen, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 855,098, Nov. 25, 1977, Pat. No. 4,156,378. This application Jan. 24, 1979, Ser. No. 6,057
Int. Cl.[2] B26D *11/00*
U.S. Cl. 83—49 3 Claims

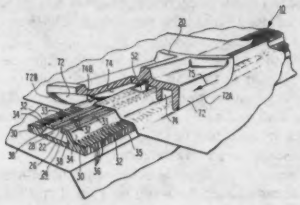


1. A method of cutting tire making material which has parallel closely spaced cords or wires embedded in uncured rubbery gum, the method comprising supporting said material on an uninterrupted plane hard surface, selecting a rotatable unheated disc cutter having a blunt circular edge, moving said cutter first in a direction normal to said surface to cause the cutter to penetrate said gum between a side-by-side pair of cords or wires and to engage said surface, then while maintaining the blunt edge of said cutter in contact with said surface rolling said cutter in a direction parallel to said surface in a path determined by said pair of cords or wires so as to sever said gum between said pair without baring either and without overheating said gum.

4,210,043
CUTTING ASSEMBLY

Kenard E. Urion, Woodbury, N.J., and Douglas R. Cleminshaw, Tully, N.Y., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 9, 1978, Ser. No. 959,853
Int. Cl.[2] B26D *7/14*
U.S. Cl. 83—175 16 Claims



2. A cutting assembly of the type usable for severing a sheet into discrete elements, said assembly including:

an elongate track member having upper wall segments terminating in spaced-apart inner surfaces that define an elongate slot between them;

a cutter slide movable in said slot and including a cutting element having a cutting edge for engaging and severing the sheet when said sheet is positioned over the slot in a taut condition, the improvement wherein the cutter slide includes:

a top wall overlying the cutting element;

first means directed downwardly from the top wall for forcing sections of the sheet against the track on opposite sides of the slot as the cutter slide is moved to locally immobilize said sheet;

second means directed downwardly from the top wall for engaging immobilized sections of the sheet on opposite sides of the slot as the cutter slide is moved to tension said sections into a taut condition over the slot;

said first and second downwardly directed means being aligned with the cutting edge for maintaining the sections of the sheet immobilized and tensioned prior to and during the severing of said sections.

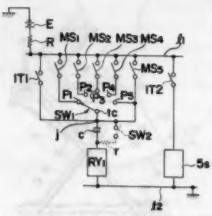
4,210,044
ROLL PAPER CUTTING ARRANGEMENT

Keiji Nakatani, Machida, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 19, 1979, Ser. No. 5,013
Claims priority, application Japan, Feb. 3, 1978, 53-11827
Int. Cl.[2] B26D *5/26*
U.S. Cl. 83—241 8 Claims

1. A roll paper cutting arrangement for use in mechanical equipment employing a roll of paper to be cut into predetermined length for use, said roll paper cutting arrangement comprising means for transporting the paper which draws out a leading end of the paper from the roll for transportation, means for cutting the paper to the predetermined length on the passage of transportation of the paper, power source for actuating said cutting means, a first switching means for connecting said power source with said cutting means, a plurality of sec-

ond switching means, means for sequentially actuating said plurality of second switching means in association with functioning of said transporting means at predetermined relation with respect to feeding amount of the paper, means for selecting one of said plurality of second switching means, and means



for memorizing the function of the selected one of said plurality of second switching means, said memorizing means being connected to said second switching means through said selecting means, said first switching means being so arranged as to be actuated following the memorizing function of said memorizing means.

4,210,045

SLITTER HAVING ADJUSTABLE CIRCULAR KNIVES

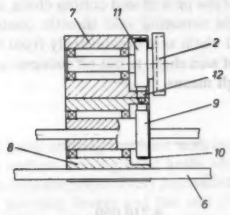
Dieter Osburg, Neuss-Weckhoven, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Aug. 17, 1978, Ser. No. 934,301

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741559

Int. Cl.² B26D *1/24*

U.S. Cl. 83—497 **1 Claim**



1. Slitter for web material such as paper and cardstock webs and the like, comprising a plurality of pairs of rotatable circular knives disposed side by side each comprising a lower cup knife and an upper disk knife which plunges into the web material during use, means mounting each upper disk knife on a rail with its axis perpendicular to the line of movement of the web of goods to run freely and for adjustable movement perpendicular to the line of movement of the web, means mounting each lower cup knife on a rail with its axis at a selected angle to the line of movement of the web of goods for adjustable movement perpendicular to the line of movement of the web and for pivotal movement on a support to obtain the selected angle and means for driving each lower knife comprising a belt pulley mounted in the support and a pivotable belt drive mounted in the support.

4,210,046

CROSS BEAM PRESS AND CONTROL

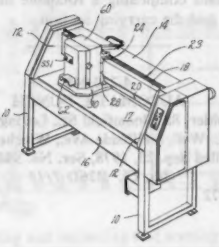
Frederick A. Pretty, Alveston, England, assignor to USM Corporation, Farmington, Conn.

Filed Dec. 14, 1977, Ser. No. 860,318

Claims priority, application United Kingdom, Dec. 18, 1976, 52982/76

Int. Cl.² B26D *5/12, 7/26*

U.S. Cl. 83—525 **8 Claims**



1. A travelling head press comprising:

a lower platen;

a cross-beam extending across the width of the lower platen and positioned rearwardly thereof, said cross-beam having a flat front face with an upper rail and a lower rail extending outwardly from the flat front face;

a carriage mounted on the upper and lower rails extending outwardly from the flat front face of the cross-beam so as to allow slidable movement therealong at a short distance from the front face;

an upper platen suspended from said carriage; and

means for effecting relative movement between said upper platen and said lower platen so as to effect an operating stroke of said press.

4,210,047

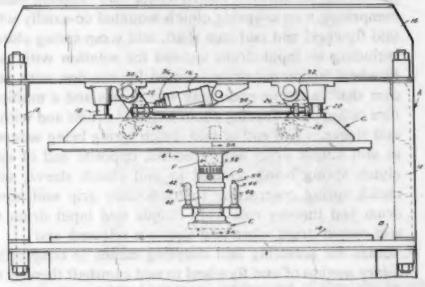
DIE CUTTING MACHINE WITH MAGNETIC HOLDER FOR ACCURATE DIE POSITIONING

Edgar Haas, Fort Lee, N.J., and Edward Kottsieper, Dresden Mills, Me., assignors to Herman Schwabe, Inc., Brooklyn, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,477

Int. Cl.² B26F *1/40*; B21D *28/04*

U.S. Cl. 83—530 **23 Claims**



1. A die cutting apparatus or the like comprising a support, a cutting surface mounted on said support, a pressure head mounted on said support above said surface, means for moving said head toward and away from said surface, a die, means, interposed between said head and said surface, for holding said die, and means for mounting said die holding means to said pressure head for movement therewith, said holding means

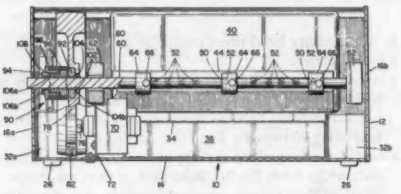
comprising: a base section connected to said mounting means, a die carrying section comprising means for magnetically retaining said die and means for permitting movement of said die carrying section relative to said base section in the direction of head movement so as to facilitate accurate positioning of said die, said movement permitting means comprising; a spring operably connected between said sections to permit linear displacement therebetween and means for permitting relative rotation between said sections, said relative rotation permitting means comprising a rotatable bracket connecting said spring to said die carrying section.

4,210,048

AUTOMATIC PUNCH

Edmond U. Cohler, 85 Bloomfield St., Lexington, Mass. 02173, and Ernest L. Weil, 3 Hillside Ave., Winchester, Mass. 01890

Filed Sep. 25, 1978, Ser. No. 945,232
Int. Cl.[2] B26D *7/16*
U.S. Cl. 83—572 **11 Claims**



1. An automatic punch for punching at least one hole through one or more sheets of material, said punch comprising:

A. at least one punch head movable between a rest position and a punching position;

B. a cam shaft adapted for rotation about an axis transverse to the direction of movement of said punch head and including an eccentric cam rotatable with said shaft and positioned to move said punch head to its punching position when said shaft is rotated;

C. a flywheel rotatable about said cam shaft axis;

D. means for imparting rotary motion to said flywheel;

E. means normally rotatively decoupling said flywheel from said cam shaft to permit rotation of said flywheel independently of said cam shaft and actuable for rotatively coupling said flywheel to said cam shaft for a predetermined limited displacement of said flywheel, said coupling means comprising a wrap-spring clutch mounted co-axially with said flywheel and said cam shaft, said wrap-spring clutch including an input drum secured for rotation with said flywheel, an output drum secured for rotation with said cam shaft, a sleeve encircling said drums and a multiple turn coiled clutch spring encircling said drums and within said sleeve, a first end of said clutch spring being secured to said output drum and a second, opposite end of said clutch spring being secured to said clutch sleeve, said clutch spring contracting to frictionally grip said input drum and thereby rotatively couple said input drum to said output drum when said sleeve is released; and

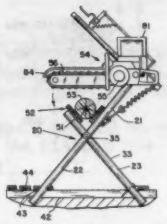
F. means for actuating said coupling means to couple the rotary motion of said flywheel to said camshaft thereby to drive said punch head to its punching position, said actuating means comprising an escapement that is movable between a first position in which it engages said clutch sleeve to restrain said sleeve from moving with said input drum and a second position in which it disengages said clutch sleeve to release said sleeve for rotation with said input drum, whereby said clutch is actuated when said escapement means releases said clutch sleeve.

4,210,049

TUBULAR FRAME SUPPORTED, CANTILEVERED CHAIN SAW

R. Raymond Gauthier, 9 Chiswick Rd., Hudson, N.H. 03051

Filed Dec. 21, 1978, Ser. No. 971,802
Int. Cl.[2] B27B *17/02*; B27G *19/00*
U.S. Cl. 83—796 **10 Claims**



1. A chain saw support comprising:

a generally U shaped frame having a pair of elongated legs, each with a sleeve at one end rotatably supporting an elongated shaft therewithin at about shoulder level above ground level, and each with an opposite lower end having means for anchoring the same to the ground,

log trough means supported at about waist height above ground level on said U shaped frame and extending in parallelism with said shaft to slidably support a log therein, with the end to be cut extending beyond said trough and outside one said leg;

a power chain saw, cantilever-supported on one end of said shaft outside said one leg, and having the cutting chain thereof positioned to move in a vertical plane passing through the desired cut line of the log;

a lever arm handle detachably affixed to said shaft for movement therewith and extending outwardly and upwardly from said shaft in the same direction as said cutting chain of said saw but at a location inwardly of said one leg to a free terminal end;

and throttle control means at said free end of said arm connected to the throttle of said chain saw;

whereby an operator may stand in front of said lever arm handle out of the path of said cutting chain, and lower said handle, while actuating said throttle control means, to oscillate said chain saw downwardly from the horizontal on the axis of said shaft, to cut off successive ends of a log in said trough means.

4,210,050

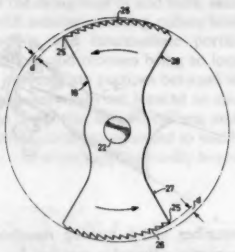
CUTTING DEVICE WITH ROTATING CUTTERS

Helmut Paulus, Herzogenrath, Fed. Rep. of Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 778,259, Mar. 16, 1977, Pat. No. 4,114,493.
This application Aug. 21, 1978, Ser. No. 935,739
Int. Cl.[2] B27B *33/02*
U.S. Cl. 83—848 **2 Claims**

1. A cutting tool comprising a body portion having two substantially planar, equiangularly spaced, substantially sector-shaped, substantially coplanar segments joined apex to apex, the body portion being shaped to provide a pair of continuous, opposed, sector-shaped cut-out portions, each cut-out portion extending between the trailing edge of one segment and the leading edge of the other segment, the angular extent of each cut-out portion being greater than that of either of the body segments, cutting edges on an outer peripheral surface of each

of the segments, means defining a center of the body portion, the distance of each cutting edge from the center continuously



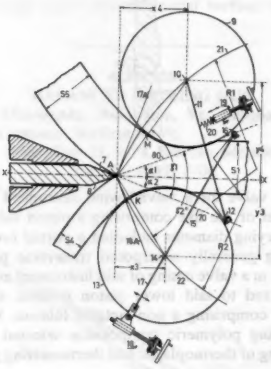
increasing from the leading edge of each segment to the trailing edge of each segment.

4,210,051

BAND KNIFE SPLITTING MACHINE FEED ROLL ARRANGEMENT

Karl Fingerle, Korb, and Gerd Lotzwik, Stuttgart, both of Fed. Rep. of Germany, assignors to Fortuna-Werke Maschinenfabrik GmbH, Stuttgart-Bad Canstatt, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 947,167
Int. Cl.² B26D *1/46*
U.S. Cl. 83—871 **7 Claims**



1. A band knife splitting machine with two superposed feed rolls and an endless moving band knife, characterized in that the two feed rolls are respectively journalled at the ends of two intersecting pivoting levers and the end of the lever for the lower feed roll is pivoted above the plane of cutting while the end of the lever for the upper feed roll is pivoted below the cutting plane.

4,210,052

SCORING MECHANISM

Arnold R. Fisher, Laurinburg, N.C., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

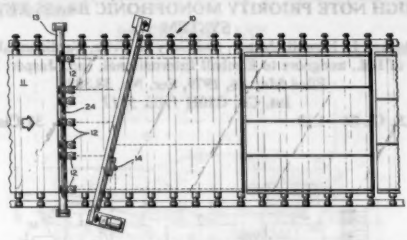
Continuation of Ser. No. 795,069, May 9, 1977, abandoned. This application Sep. 28, 1978, Ser. No. 946,480
Int. Cl.² B26D *3/08*
U.S. Cl. 83—881 **5 Claims**

1. In a scoring mechanism of the type mounted over a moving sheet of material and having an arm movable along a path lying in a plane extending normal to the surface and longitudinally along the path of the sheet material, the arm including a pair of axially aligned gauge wheels rotatably mounted thereon, the improvement comprising:

a. means connected to said arm for moving and maintaining said gauge wheels in continuous rolling engagement with the moving sheet of material;

b. a scoring tool mounted on said arm between said gauge wheels for movement relative thereto;

c. means mounted on said arm and connected to said scoring



tool, extending and retracting said scoring tool relative to said gauge wheels while the gauge wheels are maintained in continuous rolling engagement with the moving sheet of material whereby intermittent uniform score lines are precisely located and quickly produced in the moving sheet of material; and

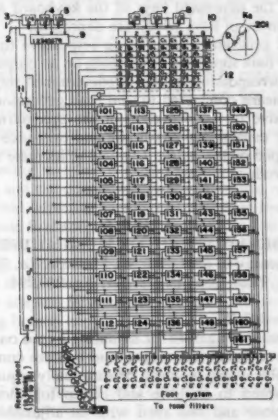
d. means connected between said scoring tool and said extending and retracting means for adjusting the extension of said scoring tool relative to said gauge wheels.

4,210,053

ELECTRONIC MUSICAL INSTRUMENT

Takeji Kimura, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 3, 1979, Ser. No. 35,900
Claims priority, application Japan, May 4, 1978, 53-53331
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **8 Claims**



1. In an electronic musical instrument of the type in which information of the actuation of keys is detected by scanning switch blocks for the keys so as to memorize and hold said information of actuation of the keys in electrical capacitances for developing output musical tones corresponding to said memorized information of the actuation of the keys, an improvement of said electronic musical instrument which comprises a first group of electrical capacitances which hold ana-

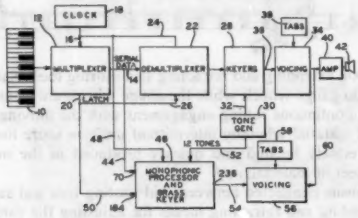
log values corresponding to the amplitudes of musical tones during the scanning period of said switch blocks for the keys, and a second group of electrical capacitances which memorize said analog values for a period sufficiently longer than the scanning period of said switch blocks of the keys after releasing depression of the keys so as to control musical tone envelopes by said second group of the electrical capacitances.

4,210,054

HIGH NOTE PRIORITY MONOPHONIC BRASS KEYER SYSTEM

Stephen L. Howell, Jasper, and Gary R. Fritz, Ferdinand, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed May 14, 1979, Ser. No. 38,388
Int. Cl.[2] G10H *1/02, 5/12*
U.S. Cl. 84—1.19 **31 Claims**



1. An electronic musical instrument comprising:

a keyboard,

multiplex means for scanning said keyboard and developing a polyphonic serial data stream containing keydown signals pertaining to depressed keys of the keyboard,

tone generator means capable of producing tones corresponding in pitch to the keys of the keyboard,

data processing means connected between said multiplex means and said tone generator means for receiving said polyphonic serial data stream and producing a monophonic data signal corresponding to a predetermined single one of the depressed keys of the keyboard regardless of the number of keys which are depressed,

said tone generator means being responsive to said monophonic data signal for developing on an output terminal a tone corresponding to said predetermined single key, and

control means connected to said tone generator means and responsive to the actuation of the predetermined single key for causing the amplitude and brilliance of the tone developed on the output terminal to increase with time so as to produce a brass tone.

4,210,055

ADJUSTABLE LIGATURE FOR MUSICAL INSTRUMENT

Vito Platamone, Jr., 3504 49th St., Metairie, La. 70001

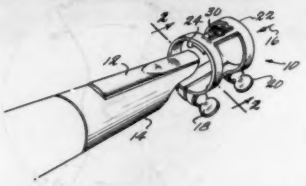
Filed Oct. 3, 1978, Ser. No. 948,294
Int. Cl.[2] G10D *9/02*
U.S. Cl. 84—383 R **13 Claims**

1. An adjustable ligature for mounting a reed on the mouthpiece of a woodwind instrument, said ligature comprising:

an adjustable clamp having a first manually adjustable member adapted to encircle and clamp together both said mouthpiece and said reed with an adjustable clamping pressure, said reed having a curved surface disposed outwardly towards said clamp and a flat surface disposed on a flat table portion of the mouthpiece;

a contact member having a plurality of spaced apart contact edges disposed within said clamp for contacting said curved surface of the reed at a plurality of contact points with adjustable pressure according to the adjustment of said clamp;

means having a second manually adjustable member adjustably connecting said contact member to said clamp and including a two-dimensional slot permitting two-dimensional relative movement between said clamp and said



contact member and a locking member including said second manually adjustable member for positively maintaining any desired relative position of the clamp and contact member.

4,210,056

VALVE CONSTRUCTION FOR BRASS WIND INSTRUMENT

Ronald R. Ciccarelli, 5730 Howe St., Pittsburgh, Pa. 15232

Filed Jul. 11, 1978, Ser. No. 923,540
Int. Cl.[2] G10D *9/04*
U.S. Cl. 84—392 **8 Claims**

1. A piston valve for a valved wind instrument such as a trumpet, cornet or the like comprising a piston valve having portions of varying diameter including a ported lower piston portion having generally superposed transverse passages in sliding contact in a valve casing of said instrument and a piston rod portion fixed to said lower piston portion, said lower piston portion comprising a non-metallic lubrous, hydrophobic, non-swelling polymeric composition selected from the group consisting of thermoplastic and thermosetting polymeric compositions.

4,210,057

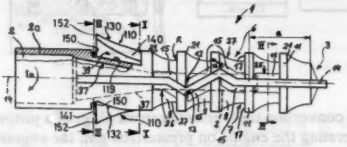
ANCHORING DOWEL WITH DETENT LUGS

Hermann Göring, Riegel; Hansjörg List, Waldkirch; Klaus Brunswig, and Winfried Labatzke, both of Emmendingen, all of Fed. Rep. of Germany, assignors to Upat GmbH & Co., Emmendingen, Fed. Rep. of Germany

Filed Oct. 5, 1977, Ser. No. 839,588
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2644963; Oct. 8, 1976, 2645432
Int. Cl.[2] F16B *13/02*
U.S. Cl. 85—83 **14 Claims**

1. An anchoring dowel comprising, in combination, an elongated body portion having a leading end, a trailing end and an outer circumferential surface which is curved in cross-section, said body portion also having substantially longitudinally extending slots at said leading end, which subdivide the latter into at least two spreading sections having respective projections and recesses of triangular configurations forming respective tips, said projections and recesses bounding said slots so

that the projections of one of said spreading sections extend into the respective recesses of the other of said spreading sections to give said slots zig-zagged configurations at least along a portion of the elongation of said slots, said leading end being provided with annular retaining collars having opposite circumferential edges, and intermediate portions therebetween, said projections and recesses being so located relative to the respective intermediate portions between said retaining collars that said respective tips are located on said circumferential edges of the respective annular collars; and at least one detent lug elastically yieldably connected to said body portion at a merger region and projecting outwardly beyond said outer



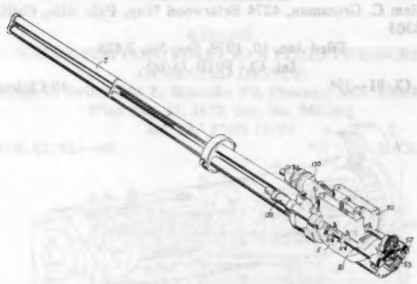
circumferential surface of said body portion at least in a relaxed condition, said lug having an outer concave face of a substantially saddle-shaped configuration which merges with said outer circumferential surface of said body portion at said merger region, an elongated side face commencing at and generally merging into a generatrix of said outer circumferential surface at its end which is closer to said leading end and having a concave configuration, and an arcuate end face extending from said merger region generally in a circumferential direction of said body porton and being curved in the same manner as said outer circumferential surface of said body portion.

4,210,058

BALANCED GATLING GUN

Robert E. Chiabrandy, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 25, 1978, Ser. No. 945,656
Int. Cl.[2] F41D *7/04*
U.S. Cl. 89—12 **9 Claims**



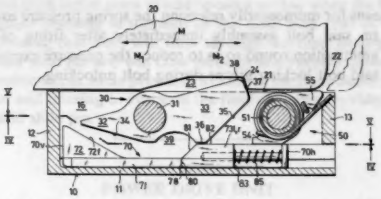
1. A gun having a longitudinal axis and including:
a gun housing,
a rotor journaled for rotation relative to said housing about said longitudinal axis and having a first plurality of gun barrels and a like plurality of gun bolts;
each of said gun bolts journaled to said rotor for longitudinal reciprocation relative to a respective gun barrel, a cycle of operation of each of said gun bolts including a full cycle of reciprocation, forwardly and aftwardly;
a main cam journaled for rotation relative to said rotor about said longitudinal axis and coupled to each of said gun bolts for driving each of said gun bolts through full cycles of reciprocation;
said main cam having a configuration such that a full cycle of reciprocation of each of said first plurality of gun bolts requires a second plurality of revolutions of said main cam.

4,210,059

SERVO-RELEASE MECHANISM

Gerhard Munn, Meerbusch, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,643
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742241
Int. Cl.[2] F41D *11/02*
U.S. Cl. 89—132 **6 Claims**



1. In an automatic firearm having a reciprocally movably mounted breech body with a catch surface, an improved servo-release mechanism, comprising in combination,
a catch lever rockably mounted in said firearm and having a first arm adapted to be selectively moved to a first catch position and a second firing position,
mechanical control means including an adjusting member slidably movably mounted in said firearm between first and second end positions and kinetic energy absorption means for receiving and storing a portion of the recoil kinetic energy of said breech body and imparting at least a portion of said stored kinetic energy to said adjusting member; said kinetic energy absorption means including an energy storing coil spring means and means associated with said coil spring means for selectively locking said coil spring means after said portion of said kinetic energy had been stored therein and selectively releasing said coil spring means to impart it onto said adjusting member;
said breech body having a first contact surface adapted to coact with said first arm of said catch lever and said adjusting member having second and third contact surfaces adapted to coact respectively with said first and second arms of said catch lever, said coaction between said second contact surface of said adjusting member and said first arm positioning said first arm in the catch position when the adjusting member is in the proximity of its first end position and the coaction between said third contact surface of said adjusting member and said second arm positioning said first arm in the firing position when the adjusting member is in the proximity of its second end position;
said energy absorption means having a second member adapted to coact with the recoiling breech body and a first member adapted to transmit the energy received from the recoiling breech body to said adjusting member.

4,210,060

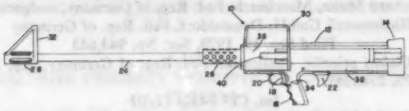
GAS OPERATED AUTOMATIC WEAPON

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 829,716, Sep. 1, 1977, abandoned. This application Feb. 1, 1978, Ser. No. 874,114
Int. Cl.[2] F41D *5/04*
U.S. Cl. 89—192 **11 Claims**

6. In an automatic weapon of the type having a bolt assembly reciprocable within a receiver frame to extract and ram successive cartridges fed into a weapon barrel chamber, and further including a bolt locking mechanism adapted to lock said bolt assembly in position with a cartridge in said chamber,

said bolt assembly being operated by gas pressure developed in said weapon barrel bore and exerted on the bolt extraction spring compressed during firing of the automatic weapon with a subsequent bolt extraction by the extension of the bolt extraction spring, the improvement comprising:



means for momentarily releasing the spring pressure exerted on said bolt assembly immediately after firing of said ammunition round so as to reduce the pressure exerted on said bolt locking means during bolt unlocking.

4,210,061

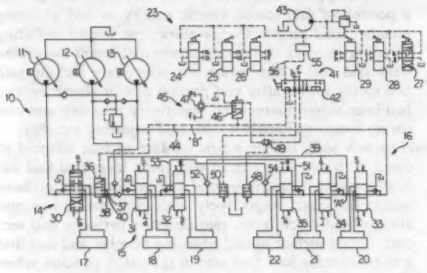
THREE-CIRCUIT FLUID SYSTEM HAVING CONTROLLED FLUID COMBINING

Donald L. Bianchetta, Coal City, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 746,978, Dec. 2, 1976, abandoned. This application Oct. 30, 1978, Ser. No. 956,169

Int. Cl.[2] F01B *25/02*

U.S. Cl. 91—6 **13 Claims**



1. In a fluid system having at least one pressurized fluid source serving a first, second, and third fluid circuit, said first circuit having a work element and each of said second and third circuits each having a plurality of work elements and control means connected to each respective work element for selectively, controllably passing fluid to and from said work element, said control means of each of said second and third circuits being connected in interruptible series with the control means of the same circuit, the improvement comprising:

delivering means for delivering excess fluid from the third circuit to a preselected work element of the second circuit in response to actuation of said control means connected to said preselected work element; and

diverting means movable between a first position at which excess fluid delivered from the fluid source to the first circuit is delivered to the second and third circuits and a second position at which excess fluid delivered to the first circuit is diverted to only preselected work elements of the third circuit and said delivering means in a preselected order.

4,210,062

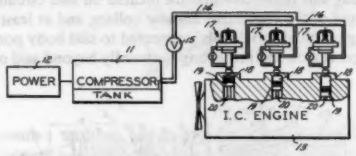
AIR CONVERSION FOR INTERNAL COMBUSTION ENGINES

Edward J. Plesko, 8362 Ransom Rd., Ashley, Mich. 48806

Continuation of Ser. No. 704,397, Jul. 12, 1976, abandoned. This application Aug. 14, 1978, Ser. No. 933,870

Int. Cl.[2] F01B *29/04*

U.S. Cl. 91—54 **6 Claims**



1. A conversion unit replacing spark plugs of a piston engine for operating the engine on pressurized gas, the engine having a plurality of pistons reciprocable in a compression stroke and an exhaust stroke in respective cylinders, the unit comprising:

a source of compressed gas;

a housing having a flow passage therethrough;

an inlet port connected to said source and communicating pressurized gas from said source of pressurized gas into said housing;

a drive valve in said housing opening and closing to flow of said pressurized gas through said housing;

a sensor responsive to pressure down-stream of said drive valve and operably connected to said drive valve; and

an outlet from said housing connected into the cylinder of a piston engine, above the piston, said outlet in communication with said sensor and said pressurized gas when said drive valve is open, said sensor causing said drive valve to open on the compression stroke of the pistons and to close on the exhaust stroke of said piston whereby the flow of said compressed gas is automatically timed.

4,210,063

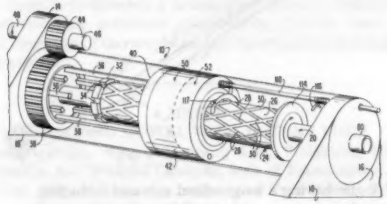
FLUID POWER DEVICE

William C. Grossman, 4274 Briarwood Way, Palo Alto, Calif. 94303

Filed Jan. 10, 1979, Ser. No. 2,428

Int. Cl.[2] F01B *15/00*

U.S. Cl. 91—196 **10 Claims**



1. A fluid actuated power device comprising: a tubular shaft; a tubular cylinder shiftably mounted on the shaft for reciprocation along the length thereof; means coupled with the shaft and the cylinder for dividing the cylinder into two chambers which vary in volume as a function of the movement of the cylinder relative to the shaft; means coupled with the cylinder for rotating the same only in one direction about the shaft as the cylinder reciprocates relative thereto; means coupled with the shaft for admitting a fluid under pressure alternately into the chambers to cause the cylinder to reciprocate relative to the shaft; and means coupled with the cylinder for converting the reciprocal motion of the cylinder to rotational motion.

4,210,064

METHOD AND DEVICE FOR BRAKING THE SPEED OF MOVEMENT OF THE PISTON OF A PLUNGER-CYLINDER DEVICE

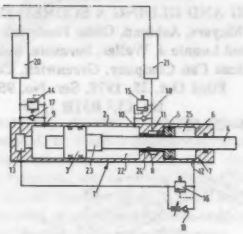
Josephus J. Beerens, Liempde, Netherlands, assignor to Hydraudyne B.V., Boxtel, Netherlands

Filed Jan. 10, 1978, Ser. No. 868,316

Claims priority, application Netherlands, Jan. 10, 1977, 7700188

Int. Cl.[2] F15B *15/22;* F01B *11/02*

U.S. Cl. 91—394 7 Claims



1. The method of braking the speed of movement of the piston of a plunger/cylinder device upon the approach of the end of the stroke of said piston, which comprises the steps of:

(a) trapping fluid ahead of said piston as the end of stroke is approached whereby predetermined pressure build-up of fluid occurs ahead of said piston thereby to brake movement of the piston; and

(b) during step (a), commencing drive movement of a second piston in a separate piston/cylinder device by intercepting the movement of the first piston and compressing fluid ahead of the second piston in the separate piston/cylinder device whereby the braking force on the first piston is divided between the fluid pressures being built up within both devices so that the cylinder of neither device is subjected to excessive fluid pressure.

4,210,065

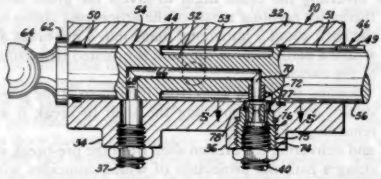
VALVE FOR CONTROLLING A FLUID PRESSURE OPERATED DEVICE

Ralph E. Switzer, 44 E. Roanoke #8, Phoenix, Ariz. 85004

Filed Sep. 27, 1978, Ser. No. 946,381

Int. Cl.[2] F15B *13/04*

U.S. Cl. 91—469 10 Claims



1. A two position slide valve for handling a fluid under pressure comprising:

(a) a housing having a bore formed therethrough with a fluid inlet port, a fluid outlet port and a working port communicating with that bore;

(b) a venturi in the fluid outlet port of said housing, said venturi being of smaller diameter than the fluid outlet port to provide a venturi portion and an evacuation portion therein;

(c) a slide pin axially movable in the bore of said housing and configured to provide a fluid chamber in that bore, said slide pin having a fluid passage formed therein;

(d) said slide pin movable to a first position which locates the fluid chamber provided thereby in communication with the fluid inlet and the working ports of said housing so that when the fluid under pressure is supplied to the fluid inlet port of said housing that fluid will flow through the fluid chamber provided by said slide pin; and

(e) said slide pin movable to a second position which locates the fluid chamber provided thereby in communcation with the working port and the fluid outlet port of said housing and locates the fluid passage of said slide pin so that it aligns with and extends between the fluid inlet and the fluid outlet ports of said housing so that when the fluid under pressure is supplied to the fluid inlet port of said housing that fluid will flow through the fluid passage of said slide pin and will flow through said venturi causing a reduction in static pressure proximate the fluid outlet port of said housing to evacuate the fluid chamber provided by said slide pin.

4,210,066

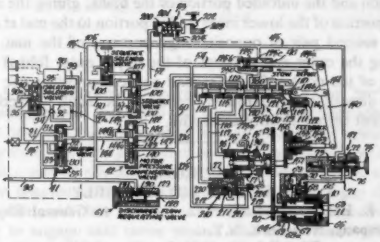
POWER DRIVE UNIT

Allyn M. Aldrich, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 26, 1978, Ser. No. 900,312

Int. Cl.[2] F01B *13/04;* F04B *1/30*

U.S. Cl. 91—506 15 Claims



1. A power drive unit for imparting two-directional drive to a thrust reverser mechanism with different torque demands in different cycles of operation including low torque and high speed in a deploy cycle and high torque and low speed in a stow cycle comprising, a two-direction variable displacement hydraulic motor with a displacement-varying means, a control cylinder having a piston connected to said displacement-varying means, a first circuit connected to said motor and including a valve for controlling the direction and volume of hydraulic flow to the motor and providing the same full rate of flow to said motor at the beginning of each of said cycles, and a second circuit connected to said control cylinder and including valve means operable independently of said valve for establishing the position of the piston in the cylinder at the beginning of each cycle to control the position of said displacement-varying means and have a minimal motor displacement for starting the deploy cycle and a maximum displacement for starting the stow cycle.

4,210,067

METHOD OF AND APPARATUS FOR MAKING AIR FILTERS

Alton Evans, Jr., Utica, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

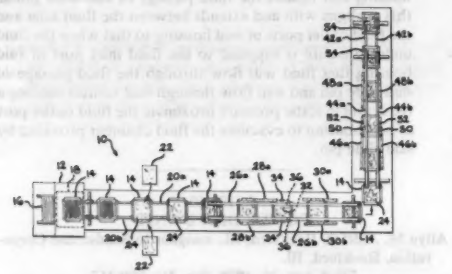
Filed Oct. 2, 1978, Ser. No. 947,385

Int. Cl.[2] B31B *1/26;* B01D *46/10*

U.S. Cl. 93—1 F 2 Claims

2. A method of making an air filter comprising placing an air filter mat on a paperboard filter frame blank, doubly folding

each of a first pair of opposite edge portions of the blank upwardly to provide a pair of upper and lower inner folded portions between an upper outer folded portion and the unfolded portion of the blank, gluing the inner end portion of the lower inner folded portion to the mat at each of a first pair of opposite edge portions of the mat, gluing the outer end portions of the upper outer folded portions of the doubly folded first pair of opposite edge portions directly to the unfolded portion of the blank respectively adjacent their junctures



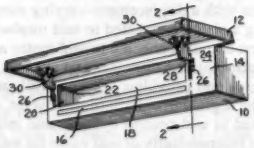
therewith, doubly folding each of a second pair of opposite edge portions of the blank upwardly to provide a pair of upper and lower inner folded portions between an upper outer folded portion and the unfolded portion of the blank, gluing the inner end portion of the lower inner folded portion to the mat at each of a second pair of opposite edge portions of the mat, and gluing the outer end portions of the upper outer folded portions of the doubly folded second pair of opposite edge portions directly to the unfolded portion of the blank respectively adjacent their junctures therewith.

4,210,068

BAG SEALER LID ASSEMBLY

Fred E. Baker, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,025
Int. Cl.[2] B31B *1/64*; E05D *11/10*
U.S. Cl. 93—8 R **3 Claims**



1. In a home bag sealer of an integral molded elongated box housing with an opening for supporting a roll of bag material and a rear pivoted lid on the housing to close the opening, a heater along the opening operative on lid closing to seal a bag, the improvement in the lid assembly comprising,

a wall at each end of the opening,

a bearing aperture in each wall adjacent the opening at the pivot axis,

a flat front wall enclosing the upper surface of the housing around the opening,

an elongated slot in the flat wall adjacent and parallel to each end wall opposite the opening,

sized means on an end wall projecting away from the opening and offset of said apertures,

a pair of axially flexible spaced bellcranks connected to the lid with a free arm directed to the rear thereof and spaced for said arms to snugly enter said slots, and

a pivot on each arm end directed towards and received in said apertures to pivot the lid,

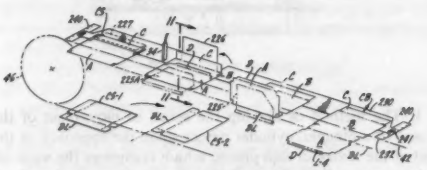
whereby the cranks are biased apart to enter the slots and apertures to block the lid open by the sized projection means contacting an arm preventing pivoting, the lid being closed by rotation, temporarily spreading the cranks axially to ride over the projecting means as the arms enter the slots.

4,210,069

FOLDING AND GLUING A SCORED CARTON BLANK

George L. Meyers, Ashland, Ohio; Frederick C. Seiden, Holmes Beach, and Lonnie J. Waller, Sarasota, both of Fla., assignors to American Can Company, Greenwich, Conn.

Filed Oct. 25, 1978, Ser. No. 954,402
Int. Cl.[2] B31B *1/26*
U.S. Cl. 93—36 M **10 Claims**



1. A method of forming a folded, glued carton shell from a flat blank and locating the shell in a pre-break station in position to be fed to the supply magazine of a cartoner machine in which the shells, after being erected, are filled while moving along a predetermined filling path, comprising the steps of:

A. stacking the flat blanks at a carton blank supply station, each blank having a pair of panels separated by a pair of score lines located between the panels and also having two spaced apart side seam glue flaps each joined by a score line to a respective one of the panels;

B. separating the lower-most one of the carton blanks in the stack by vacuum draw down, releasing the vacuum and picking up the carton blank by an articulated clamp fastened to an endless chain which moves the carton blank along a folding path parallel to the filling path of the cartoner machine;

C. progressively folding the blank, as it is moved along the folding path, along selected of the score lines to present the two panels in opposed juxtaposition and to overlap the side seam panels while gluing them to one another, thereby completing the carton shell;

D. inverting the chain flight to invert the glued shell and thereafter pivoting a part of the articulated clamp to turn the shell about a horizontal plane into a pre-break station where a datum line of the shell is oriented to a datum line of the cartoner;

E. releasing the glued shell from the clamp at the pre-break station and then squeezing the shell to break it at two remaining score lines;

F. and delivering the broken shell from the pre-break station along a path the projection of which coincides with the carton supply magazine of the cartoner machine.

4,210,070

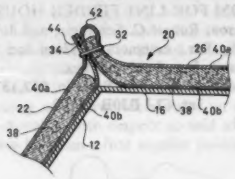
CEILING FIXTURE WITH THERMAL PROTECTION

James R. Tatum, 20 Winterton Dr., Islington, Ontario, and Barry R. Dayus, 2021 Ardleigh Rd., Oakville, Ontario, both of Canada

Filed Mar. 6, 1978, Ser. No. 883,952
Int. Cl.[2] F24F *7/00*
U.S. Cl. 98—40 D **10 Claims**

1. A thermal barrier material for the on-side fabrication of a

thermal shield in a ceiling structure over a fixture therein and which material is formed of a plurality of separate layers in surface to surface contact, the surface of each layer being unbonded to the surface of the next adjacent layer, and comprising an intermediate layer formed of a non-woven felt-woven flexible pad of non-flammable and frangible batting of fibrous ceramic material and two outer sleeve layers of panels



of a flexible, structurally durable synthetic fibrous woven non-flammable material, to form a protective flexible sleeve around said batting and means fastening said sleeve layers together at spaced intervals, and securing said batting layer in surface to surface contact therebetween but said surfaces being unbonded to one another to provide a flexible material adapted to drape over a said fixture and conform thereto.

4,210,071

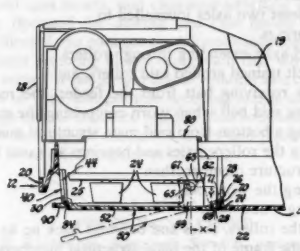
MOUNTING FOR ROOM AIR CONDITIONER ACCESS DOOR

John H. Loos, Dayton, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Dec. 4, 1978, Ser. No. 965,902

Int. Cl.[2] E06B *7/02*; F25D *23/12*

U.S. Cl. 98—94 AC **2 Claims**



1. A self-contained room air conditioner unit including an outer shell having a room side section with a control area thereon enclosed by housing means, a front cover assembly having a peripheral rectangular frame connected on said shell room side, a generally flat flexible baffle panel vertically disposed on said frame having a decorative outer face, said baffle panel having one free side edge spaced from one vertical side portion of said frame defining with opposed top and bottom frame portions an opening providing access to said control area, a door having a decorative outer face conforming with said panel face normally closing said access opening, wherein said door decorative outer face is positioned in substantially co-planar relation with said panel outer face; hinge means pivotally mounting said door on said opposed top and bottom frame portions, means for maintaining said door in its closed position, said hinge means aligned on a vertical pivotal axis spaced a predetermined distance from a vertical edge of said door, whereby upon said door being opened its decorative face is pivoted rearwardly to a location normally resulting in contact with said panel free edge, an L-shaped angle extension formed at said vertical door edge substantially coextensive therewith and disposed with a first leg of said L-shaped angle extension defining a recessed shoulder positioned sufficiently offset from the outer face of said door so as to underlie said panel free edge when the door and panel are in said co-planar relation to limit inward flexing of said panel while concealing from view said L-shaped angle extension, the second leg of said L-shaped angle extending rearwardly from said first leg, whereby upon the opening of said door said L-shaped angle extension second leg being movable into engagement with a portion of said control area housing means to positively limit the pivotal location of said door to a predetermined location short of said normal location thereby obviating contact of said door outer decorative surface with said panel free edge.

4,210,072

PORTABLE COOKING APPARATUS SUITABLE AS AN OVEN OR AS A GRILL

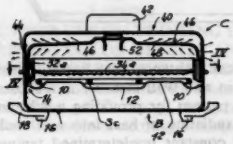
Ivano Pedrini, Via dei Mille, 22-S Giuliano Milarese (Milano), Italy

Filed Jul. 14, 1978, Ser. No. 924,845

Claims priority, application Italy, Feb. 2, 1978, 19925 A/78; Apr. 3, 1978, 21936 A/78

Int. Cl.[2] A47J *37/06*

U.S. Cl. 99—340 **8 Claims**



1. A portable cooking apparatus comprising a base, horizontal heating means located in said base, a cooking plate adapted to be heated by said horizontal heating means, said apparatus being used in a first position of said cooking plate as an oven and in a second position of said cooking plate as a grill, cover means adapted to cover said plate so as to leave a gap above said plate, said plate having raised edges, which project vertically to engage said cover means, said cover means having means for the escape of the vapors, said plate being provided perimetrically in said raised edges with conduit means, said plate having a first essentially flat surface and a second ribbed surface, said conduit means having a shape which allows direct circulation of hot air from said heating means to the food placed on the flat surface of the plate when the plate is used in said first position, said plate being invertible and being selectively used in said first position as an oven and in said second position as a grill, the food being placed on said ribbed surface of the plate when the apparatus is used in said second position, heat being transmitted by radiation and conduction through said plate in said first position and the hot air being inhibited from rising through said conduit means in said second position.

4,210,073

PORTABLE ENVIRONMENTAL CHAMBER

Margaret R. Weiss, 1508 Greenbrier Dr., Elkhart, Ind. 46514

Continuation of Ser. No. 793,597, May 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 616,175, Sep. 24, 1975, abandoned. This application Dec. 26, 1978, Ser. No. 972,826

Int. Cl.[2] A21C *13/00*; A21D *8/02*

U.S. Cl. 99—483 **5 Claims**

1. A portable environmental chamber for home food preparation and processing uses comprising

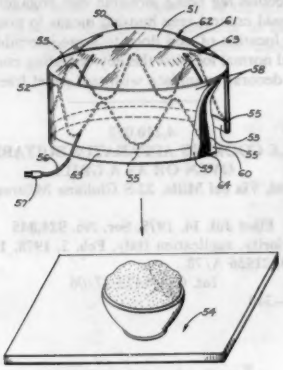
(a) a continuous, upstanding wall member consisting of a laminate having an outer and inner layer of plastic foil with a scrim held between said layers;

(b) a cover member associated with said wall member to

define, in combination, a closure having a single, planar opening,

said closure, when disposed on a flat supporting surface, forming with said surface a totally enclosed chamber,

said wall and cover members being composed of flexible material whereby said closure is collapsible; and



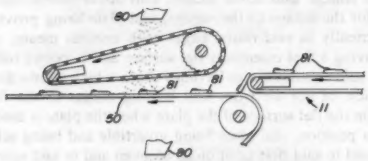
(c) an electrical resistance wire heating means attached to said scrim in said wall member in a substantially evenly distributed pattern for providing a substantially uniform controlled radiation of heat into said enclosed chamber whereby a constant predetermined temperature can be attained within said chamber.

4,210,074

CONDIMENT APPLYING APPARATUS ANDMETHOD

Clyde R. Laughman, Blittner Ave. & W. Chestnut St., Hanover, Pa. 17331

Filed Feb. 27, 1978, Ser. No. 881,376
Int. Cl.[2] A21C *9/04*
U.S. Cl. 99—494 **5 Claims**



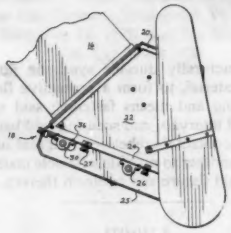
1. Condiment applying apparatus comprising a first conveyor for feeding articles to be condimented, a condiment dispenser downstream of said first conveyor for gravitationally dispensing condiment, a second conveyor downstream of said first conveyor beneath said condiment dispenser positioned with its upstream end adjacent to the discharge end of said first conveyor for receiving articles directly without inversion from said first conveyor and conveying the articles without inversion beneath said dispenser for application of condiment to the upper side of the articles and collection of condiment on said second conveyor, a third conveyor interposed beneath said dispenser and over said second conveyor and of an open-work construction for direct gravitational falling therethrough of the condiment onto said second conveyor, and mounting means mounting said second and third conveyors for movement shifting said third conveyor to a position with its upstream end adjacent to the discharge end of said first conveyor for receiving articles directly without inversion from said first conveyor with the articles receiving condiment directly from said condiment dispenser on their upper side said condiment passing from said articles and said dispenser through said third conveyor to be collected on said second conveyor and said second conveyor being shifted to a position directly receiving the articles from the third conveyor without inversion said articles having condiment applied to its underside from said condiment collected on said conveyor, so that condiment is selectively applied to one or both sides of the articles.

4,210,075

BOTTOM FOR LINT FEEDER HOUSING

Richard E. Jackson; Robert C. Schwartz, and John E. Sparks, all of Lubbock, Tex., assignors to Horn and Gladden Lint Cleaner Company, Inc., Lubbock, Tex.

Filed Nov. 20, 1978, Ser. No. 962,137
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—35 **3 Claims**



3. In a plant for processing fibrous material having

a. a condenser to condense fiber into a batt,

b. a batt chute to move the batt from the condenser to

c. a feeder having:

(i) a pair of main structural members extending forward and down,

(iii) at least two axles journalled to

(iii) bearings,

(iv) said axles extending through rollers,

(v) a belt trained around said rollers, and

d. a press receiving batt from the feeder, the method of replacing said belt when worn comprising the steps of:

e. lowering a bottom from said main structural members,

f. dropping the rollers, axles and bearings as a unit from the main structure member, then

g. removing the worn belt,

h. installing a new belt,

j. raising the rollers, axles and bearings back up to the bottom of the frame of the main structural members, then

k. raising the bottom to the main structural members.

4,210,076

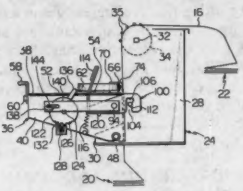
PRINTING APPARATUS

Takahiro Yamamoto, and Kazuo Sugano, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed May 24, 1978, Ser. No. 909,106
Claims priority, application Japan, May 25, 1977, 52/61667
Int. Cl.[2] B41J *1/20*
U.S. Cl. 101—111 **12 Claims**

1. A printing apparatus having lateral and fore-and-aft dimensions and including a stationary structure, a plurality of printing hammers arranged in a row within said stationary structure in a direction substantially parallel with the lateral dimension of the apparatus, a tiltable structure positioned in front of said stationary structure and rotatable about an axis of rotation which is substantially parallel with said lateral dimension and which is fixed with respect to said stationary structure, and a type carrier movable on said tiltable structure and having a substantially straight travelling path located in front of said row of printing hammers and substantially parallel with said lateral dimension, wherein the improvement comprises

position retaining means constantly engaging both said stationary structure and said tiltable structure and operable for retaining said tiltable structure in an operative position having said travelling path of said type carrier located adjacent to said row of printing hammers for forming an elongated clearance between and in parallel with said travelling path and said row of printing hammers and an inoperative position downwardly inclined about said axis of rotation away from said stationary structure, cam means engaging said stationary structure through said position retaining means and rotatable relative to said tiltable structure about an axis of rotation which is fixed with respect to said tiltable structure and which is substantially parallel with said axis of rotation of said tiltable structure, said position retaining means rotatable about an axis substantially parallel and movable with respect to said axis of rotation of said cam means between a first angular position engaging said



stationary structure through one portion of said position retaining means and holding said tiltable structure in said operative position thereof and a second angular position engaging said stationary structure through another portion of said position retaining means and allowing said tiltable structure to move into said inoperative position thereof, and clearance adjusting means mounted on said tiltable structure and securely connected to said cam means for rotation about said axis of rotation of said cam means, said clearance adjusting means being manually operated for driving said cam means to produce rotation thereof, the engagement between said cam means and said position retaining means being such that when said cam means is turned about its said axis of rotation said cam means is operative to urge said position retaining means to move relative to said tiltable structure in a direction substantially parallel with said fore-and-aft dimension when said position retaining means is in said first angular position.

4,210,077

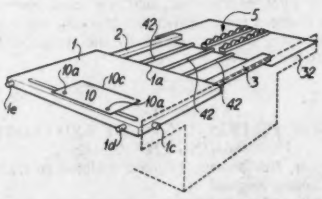
PRINTING MACHINE

Nils A. E. Lindström, Rönninge, Sweden, assignor to Svecia Silkcreen Maskiner AB, Sweden

Filed Jan. 18, 1978, Ser. No. 870,587

Int. Cl.[2] B05C *17/08*

U.S. Cl. 101—126 **12 Claims**



1. A printing machine of the type having a stencil and a squeegee associated therewith which is intended to press printing ink from said stencil upon a material to be printed, said printing machine comprising:

a frame;

a reciprocatingly movable printing table supported by said frame which is movable between a first position wherein said material to be printed is placed on said table and a second position wherein said material is printed upon;

registering means in said movable printing table which coacts with corresponding registering means in the material to be printed to position said material relative to said printing table;

means to lift the leading edge of the material to be printed from the printing table during movement of said table from said second position to said first position to disengage the material from the registering means in said table;

means to discharge said material from said printing table; and

stop means spaced from said table and fixedly attached to said frame and arranged to engage the leading edge of the material to be printed after said leading edge is lifted from the table, said stop means stopping the movement of said material upon engagement with said leading edge while continued movement of said printing table from said second position to said first position causes the table to move from beneath the material so as to remove the material from said printing table and causing the material to be brought into cooperative engagement with said discharge means.

4,210,078

APPARATUS FOR USE ON PRINTING PRESSES TO INSURE OPTIMUM COLOR DENSITY AND TO ASSIST IN MAKING CORRECTIVE ADJUSTMENT

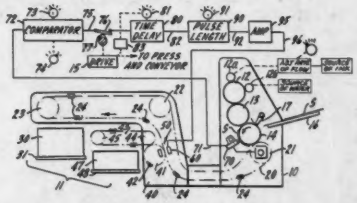
Harry Greiner, Offenbach, and Friedrich Preuss, Sprendlingen, both of Fed. Rep. of Germany, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 856,271, Dec. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 608,190, Aug. 27, 1975, abandoned, which is a continuation-in-part of Ser. No. 589,948, Jun. 24, 1975, abandoned. This application Feb. 27, 1979, Ser. No. 16,324

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1974, 2430212

Int. Cl.[2] B41F *21/08*

U.S. Cl. 101—136 **1 Claim**



1. In an apparatus for use on printing presses having means for varying rate of ink flow to insure optimum color density and to assist in making corrective adjustment, the combination comprising means for continuously feeding sheets from a press, means defining a main delivery pile and an auxiliary delivery pile, means including a main conveyor having grippers thereon and a feed side for normally conveying the sheets along the feed side from the source to the main delivery pile for depositing thereon, the main conveyor having a transfer station at the feed side, means including an auxiliary conveyor having grippers thereon for conveying sheets from the transfer station to the auxiliary delivery pile for depositing thereon, a transfer mechanism at the transfer station for operating the grippers at the transfer station in (1) a normal mode in which a sheet is delivered to the main delivery pile and (2) a transfer mode in which the grippers at the transfer station transfer the sheet to the auxiliary conveyor for depositing on the auxiliary delivery pile, a power actuator for shifting the transfer mechanism from

the normal mode to the transfer mode, means including a scanning device arranged upstream from the transfer station for scanning the printed image on each passing sheet and for producing a color density output signal which varies in accordance with the color density of the printed image on the sheet, a comparator having an input terminal connected to the scanning device and having an output terminal, the comparator having upper and lower reference devices coupled to the input terminal and having unlike reference settings to define between them a tolerance range, the comparator having means for (a) producing a control signal on the output terminal when the color density signal at the input terminal is above that for which the upper reference device is set thereby to identify a sub-quality sheet and for (b) producing a control signal on the output terminal when the color density signal at the input terminal is below that for which the lower reference device is set thereby to identify a sub-quality sheet while producing a null signal at the output terminal when the color density signal is within the tolerance range, the output terminal of the comparator being coupled to the actuator for triggering the same by the control signal, a time delay device effectively in series with the comparator for delaying the control signal thereby to delay the triggering of the power actuator until just prior to the arrival of the sub-quality sheet at the transfer station so that the sub-quality sheet is transferred to the auxiliary conveyor for deposit upon the auxiliary delivery pile, and means for adjusting the signal level of the reference devices in the comparator to vary the range of tolerance of the acceptable copies which are deposited upon the main delivery pile while copies both above and below this range are deposited together on the auxiliary delivery pile, the density condition and rate of deposit of sheets on the auxiliary pile giving constant instruction to the pressman as to the direction and degree of any corrective change required in rate of ink flow.

4,210,079

ADVANCING CYLINDER FOR USE IN A PRINTING MACHINE

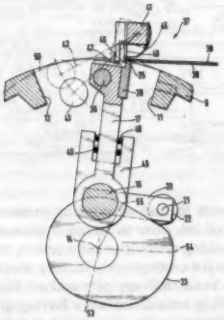
Karl Raes, Kantstr. 4, D-6201 Eppstein-Bremthal, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,097

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719404

Int. Cl.[2] B41F *21/04*; B65H *5/12, 5/14*

U.S. Cl. 101—242 **24 Claims**



1. In an offset printing machine, a combination comprising a support; means for guiding a leading edge of a respective sheet to be advanced through and printed upon in the printing machine to a predetermined location of said support; an advancing cylinder mounted on said support for rotation in a given direction about a rotary axis and having a periphery which moves past said location during the rotation of said advancing cylinder, and a hollow interior which opens onto said periphery; and means for transferring the respective sheet to a predetermined position on said periphery, including a rocking component having a first gripping surface rigidly connected thereto, means for mounting said rocking component in said hollow interior for pivoting in and opposite to said direction relative to said advancing cylinder about a pivot axis offset toward said periphery from and parallel to said rotary axis, in a range between a first terminal position in which said first gripping surface is substantially flush with said periphery, through an intermediate position in which said first gripping surface is above said periphery, and a second terminal position in which said first gripping surface is below said periphery, means for pivoting said rocking component in said range, including a cam track which is stationary with respect to said support and extends about said rotary axis, and a cam follower on said rocking component which follows said cam track and pivots said rocking component in said range in dependence on the configuration of said cam track, a gripping component having a second gripping surface and mounted on said rocking component for tilting relative thereto about a tilting axis to and from a gripping position in which said first and second gripping surfaces grip the respective sheet between themselves, and means for tilting said gripping component as a function of the pivoting movement of said rocking component in said range relative to said advancing cylinder.

4,210,080

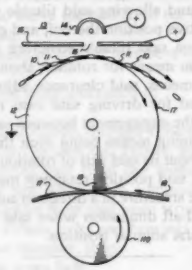
IMAGING METHOD AND APPARATUS

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1978, Ser. No. 873,296

Int. Cl.[2] G01D *5/44*

U.S. Cl. 101—426 **23 Claims**



1. A method for marking a conductive imaging surface with a liquid ink, the method comprising:

(a) providing an electrically insulating screen;

(b) loading the openings in the screen with a liquid ink in a meniscus configuration;

(c) positioning the screen adjacent a conductive imaging surface;

(d) delivering charge to the ink held in selected openings so that the charged ink is drawn into marking contact with the conducting imaging surface by the attractive forces therebetween.

4,210,081

PLANOGRAPHIC PRINTING PLATE AND PROCESS FOR MAKING THE SAME

John H. Croker, Broxbourne, England, assignor to Gastetner Limited, London, England

Filed May 10, 1978, Ser. No. 904,930

Claims priority, application United Kingdom, May 12, 1977, 20041/77

Int. Cl.[2] B41N *3/00*; G03F *7/10*

U.S. Cl. 101—465 **13 Claims**

1. A process for the production of a planographic printing plate which comprises the steps of

(1) depositing on a support sheet a layer of an aqueous mix-

ture having a pH of 2 to 5.5 consisting, in solution, a hydroxyl group-containing polymer free from acid groups, an insolubilising agent, and a synthetic organic polymer containing free acid groups, and thereafter

(2) evaporating the water from the deposited layer.

4,210,082

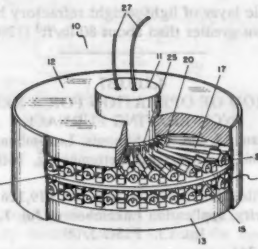
SUB PROJECTILE OR FLECHETTE LAUNCH SYSTEM

Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 30, 1971, Ser. No. 168,504

Int. Cl.² F42B *23/00*

U.S. Cl. 102—8 **3 Claims**



1. An explosive launcher for and including sub-projectiles which comprises:

means for explosively generating a radially directed explosive plane wave including selective initiating means,

a plurality of spaced apart plate members extending radially from and coaxial with said generating means,

said sub-projectiles disposed and sandwiched intermediate adjacent of said plates and oriented for releasable radial flight,

means for supporting said plates and said sub-projectiles, and

pusher means intermediate said sub-projectiles and said generator means for transmitting the thrust forces generated to said sub-projectiles and thereby launching the same,

wherein said sub-projectiles are flechettes each having a slender cylindrical body portion terminating at one end in a point and at the opposite end in a rearwardly divergent flattened portion, and a fin-assembly coaxially disposed about said body for sliding movement thereabout, said flechettes supported for and directed in an outward radial direction with said fin assembly disposed proximate said one end.

4,210,083

UNDERWATER ELECTRIC CURRENT AND ALTERNATING MAGNETIC FIELD DETECTOR

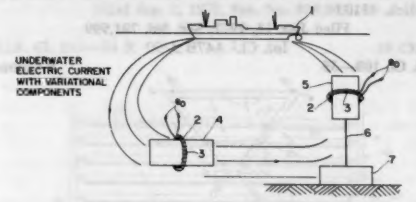
Donald F. Ream, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 295,142, Jun. 23, 1952. This application Jul. 6, 1960, Ser. No. 45,616

Int. Cl.² F42B *21/38, 21/48*

U.S. Cl. 102—18 M **5 Claims**

1. A device for detecting underwater electrical currents comprising a member having a cylindrical body portion and electrical conducting end caps secured thereto, an elongated electrical conducting member electrically joining said end caps, toroidal detector coil means inductively coupled to said conducting member for inducing voltage in said coil means by electrical current in said conducting member, annular laminated core means for said coil means for supporting said coil means in encircling relationship to said conducting member, means for concentrating in said conducting member varying magnitude underwater direct electrical currents generated from a vessel by interrupted galvanic action of its propeller and conducted by water means from the vessel to said conducting member, and a firing circuit electrically connected to said coil



means for detonating an explosive upon electrical activation of said firing circuit by the induced voltage in said coil means upon concentration in said conducting member of the currents produced by the vessel.

4,210,084

ANTI-COLLISION DEVICE FOR PASSIVE VEHICLES

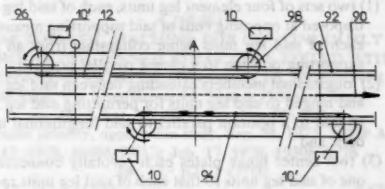
Patrick Peltie, Grenoble, France, assignor to Poma 2000 S.A., Grenoble, France

Filed Jul. 18, 1978, Ser. No. 925,823

Claims priority, application France, Aug. 4, 1977, 77 24153

Int. Cl.² B61B *7/00*

U.S. Cl. 104—178 **6 Claims**



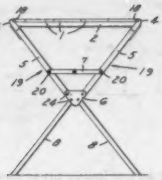
1. An anti-collision device for a transport installation with passive vehicles running on a track equipped with a means of propulsion of the vehicles from the track, the latter being subdivided into sections, an upper section and a lower section, each equipped with an individual means of propulsion controlling the travel of a vehicle engaged on the section, an upper section being followed by a lower section, the terms upper and lower being defined in relation to the direction of circulation of the vehilces, comprising means equipping an upper section of the track for measuring and for the elaboration of continuous signals representing the position X_2 and speed V_2 of the vehicle engaged on the section and means equipping the lower section adjacent to the said upper section for measuring and for the elaboration of a continuous signal of the position X_1 of the vehicle engaged on the lower section, and a processing and signalling unit receiving the said signals X_2 V_2 X_1 having means to indicate parameters of the installation influencing the catching up of the vehicles comprising means to indicate the length L of a vehicle and means to indicate the deceleration Γ capacity of a vehicle, the said processing and signalling constituting means to signal a risk of collision when the spacing between the vehicles $X_1 - X_2 - L$ is equal to or smaller than the emergency braking capacity of the upper vehicle at a velocity V_2.

4,210,085

FOLDING ARTICLE OF FURNITURE

Robert C. McLravy, II, 505 Richard Ave., Lansing, Mich. 48917, and Michael F. Zakowski, 906 Miner, Ann Arbor, Mich. 48103

Filed Jun. 14, 1977, Ser. No. 791,999
Int. Cl.² A47B 3/00
U.S. Cl. 108—35 **9 Claims**



1. A collapsible table comprising:

(a) a rigid table top comprising a plurality of rigid, elongate panels, a uniformly distributed connecting means holding said panels to each other, and said panels being of equal length and thickness and having widths dimensioned so that said panels fold to form a rectangular enclosure;

(b) at least one crossbar member being of one-piece construction and pivotally mounted to the bottom surface of one of said panels, said crossbar member being movable from a closed position in parallel contiguous subjacent relation to said panels to an open position in transverse contiguous subjacent relation to said panels to rigidify said panels into a table top unit; and

(c) supporting means detachably connected to said table top for supporting said table top in a horizontal plane and including:

(1) two sets of four element leg units, each of said leg units disposed at opposing ends of said supporting means, and each of said leg units being collapsible from an open supporting position to a closed parallel position,

(2) longitudinal members extending between said leg units and hinged to said leg units for permitting said leg units to fold to a position parallel to said longitudinal members, and

(3) two center hinge plates each pivotally connected to one of said leg units so that each of said leg units radiate outward therefrom in a single plane,

whereby said crossbar engages said longitudinal members in an oblique abutting relation by which said longitudinal members support said crossbar when said crossbar is in said open position.

4,210,086

COVER FOR SOAKING PITS AND THE LIKE

Homer Smith, Jr., Homewood, Ill.; Richard L. Pruitt, Valparaiso, Ind.; Edward F. Barnum, Gary, Ind., and Robert P. Knerr, Jr., Griffith, Ind., assignors to Inland Steel Company, Chicago, Ill.

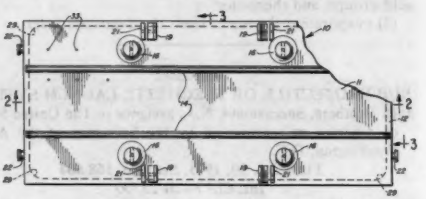
Filed May 11, 1978, Ser. No. 904,795
Int. Cl.² F23M 7/00
U.S. Cl. 110—173 A **12 Claims**

1. A cover construction for a furnace, such as a soaking pit or the like, which is subject to repeated stress during handling, said cover construction comprising:

an integral one-piece cast body of ferrous metal, said body having a plate portion and a peripheral depending skirt portion defining an enlarged recess at one side of said body;

anchor means comprising a plurality of anchor devices secured in spaced relation to the surface of said plate portion at the base of said recess; and

a monolithic insulating refractory lining disposed in and substantially filling said recess and mechanically interlocked with said anchor means, said lining comprising a



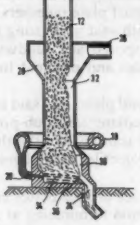
monolithic layer of light weight refractory having a bulk density not greater than about 80 lb/ft³ (1280 kg/m³).

4,210,087

METHOD OF OPERATION FOR A REFUSE INCINERATING FURNACE

Corneille Melan, 43, bld. Ch. Simonis, Luxembourg, and Rene Weiwers, 106, rue Mertens, Bettembourg, both of Luxembourg

Filed Jun. 26, 1978, Ser. No. 919,126
Claims priority, application Luxembourg, Jul. 1, 1977, 77677
Int. Cl.² F23G 5/00
U.S. Cl. 110—346 **5 Claims**



1. In a method of operating a pyrolysis furnace of the descending column type for incinerating refuse, notably household refuse, commercial and industrial rubbish, of the type comprising a charging zone, a drying zone, a pyrolysis zone and a combustion and melting zone, having at least one orifice for extracting volatile products from the drying zone, at least one orifice for extracting melted slag from the combustion and melting zone, and one or more tuyeres for injecting combustion gases under pressure into the combustion and melting zone, the improvement comprising injecting the combustion gases into the liquid mass of molten slag thereby controlling and diminishing the energy liberated at the level of the combustion and melting zone by the injection of said gases under pressure so as to prevent channel formation.

4,210,088

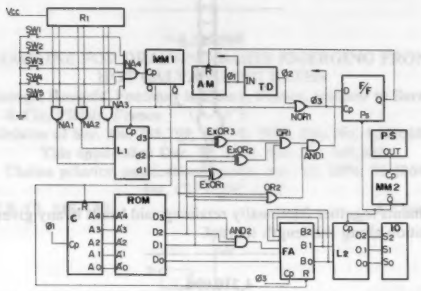
SEWING MACHINE WITH AN ELECTRONIC PATTERN STITCH CONTROL SYSTEM

Hideaki Takenoya, Hachioji, and Hachiro Makabe, Fussa, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jun. 12, 1978, Ser. No. 914,940
Int. Cl.² D05B 3/02
U.S. Cl. 112—158 E **3 Claims**

1. A sewing machine having pattern forming instrumentali-

ties forming stitches by changing the relative positions of the needle and the sewn material, comprising pattern selecting means selectively operated to produce specific signals pertaining the selected pattern to be stitched; static memory means storing control signals; free-running pulse generator means producing free-running pulses for reading out the control signals from the static memory means; means comparing the



pattern selecting signals and the control signals read out of the static memory means, thereby to stop the operation of the free-running pulse generator means; counter means operated in accordance to the control signals of the static memory to produce counting signals; and pulse generator means operated in synchronism with the pattern forming instrumentalities to produce signals to make effective the counting signals to the pattern forming instrumentalities.

4,210,089

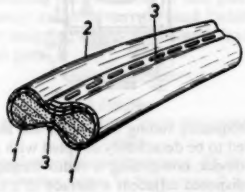
ROUNDSLING

Bengt E. Lindahl, Göthenburg, Sweden, assignor to Svensk Lasthantering Bengt Lindahl AG, Torslanda, Sweden

Continuation of Ser. No. 832,726, Sep. 12, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,806

Int. Cl.² D05B *93/00*

U.S. Cl. 112—417 **1 Claim**



1. A lifting sling comprising a core consisting of first and second spaced longitudinally extending sections of substantially equal size interconnected by an intermediate longitudinally extending section of lesser dimension, said core being formed from a plurality of longitudinally extending parallel segments, a protective cover enclosing said core and defining an overlapping section, said overlapping section being juxtaposed to the interconnecting section intermediate section of lesser dimension of said core, and a seam extending through said interconnecting intermediate section of lesser dimension and diametrically through the overlapping portion of said cover for securing said cover and said core together, the transverse extent of said seam being substantially less than the corresponding dimension of said first and second core sections so that said seam will not engage a load when said sling bears thereagainst.

4,210,090

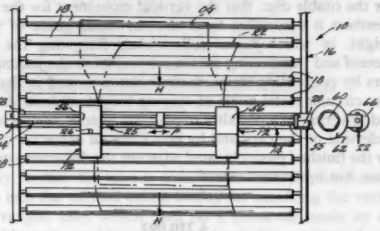
FORMATION OF RADIUS ELBOWS AND O.G. SETS

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Sep. 1, 1978, Ser. No. 938,902

Int. Cl.² B21D *39/02*

U.S. Cl. 113—54 R **15 Claims**



1. A machine for automatically assemblying radius elbow and/or O.G. set ducts, comprising

(a) four edge deformation effecting components for interlocking edge configurations of the ducts to be formed,

(b) first mounting means for mounting said edge deformation effecting components so that they define the corners of a vertical quadrate opening,

(c) pivotal movement mounting means for mounting said components so that they are pivotal about parallel vertical axes with respect to said first mounting means, and

(d) means for moving said components with respect to each other so that the horizontal and vertical spacings therebetween may be modified.

4,210,091

AUTOMATIC MACHINE FOR CONTINUOUSLY PRODUCING TINNED STRAP CAPS FITTED WITH OPENING DEVICES AND DEVICES THEREFOR

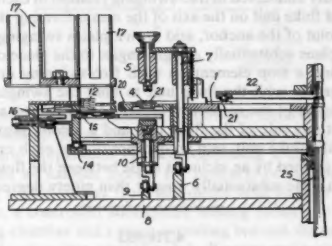
Mario Erba, Via Monfalcone 14, Monza (Milano), Italy

Filed Apr. 12, 1978, Ser. No. 896,019

Claims priority, application Italy, Sep. 28, 1977, 28039 A/77; Jul. 17, 1978, 20486/78[U]; Jan. 17, 1978, 19306 A/78

Int. Cl.² B21D *43/00*

U.S. Cl. 113—113 D **6 Claims**



1. An automatic machine for continuously producing tinned strap caps fitted with a tear opening device, characterized by comprising a disc rotating about its axis at a constant speed, including a central portion and an outer circular crown, the latter being provided with a first plurality of supporting elements or lower slides, only radially movable to receive the caps supplied by a shaped double blade magazine, and a second plurality of supporting elements or upper slides, also only radially movable, to receive the tear opening devices supplied by a second double blade magazine, said crown being also provided with a plurality of passage holes, through which each

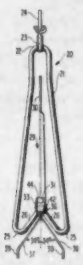
of the tear elements are positioned on the corresponding cap, the central portion carrying a plurality of joining members only vertically movable, further characterized in that the radial movement for the lower slides adjacent the cap dispenser or magazine is controlled by a flat metal cam-shaped guide, during the movement of the rotable disc, drive rollers connected to said lower slides sliding therein, that the radial movement for the upper slides adjacent the tear element dispenser is controlled by a central cam integral with the axis of rotation for the ritable disc, that the vertical movement for the joining members is controlled by a circular metal guide of varying height, in which feeler rollers slide following the profile thereof and transferring such a movement to the joining members by connection stems, further characterized in that a further circular metal guide of varying height controls the lifting and lowering of a plurality of abutting pistons raising with the underside of the caps and by providing an extractor or puller for the finished pieces located adjacent the dispensers or magazines, but upstream thereof.

4,210,092

BOAT ANCHOR

Horace V. Battersby, Star Rte. #5 Box 361 H, Dunnellon, Fla. 32630

Filed Oct. 30, 1978, Ser. No. 955,654
Int. Cl.[2] B63B *21/46*
U.S. Cl. 114—299 **13 Claims**



1. An anchor comprising a fluke unit defining a plane, a pocket shank, means forming an articulation joint between said fluke unit and pocket shank and defining an axis, a pair of crown plates positioned one on each side of the fluke unit and hingedly connected in free-swinging relation to each other and to said fluke unit on the axis of the means forming the articulation joint of the anchor, said crown plates swinging in a common plane substantially at right angles to the plane of the fluke unit and a stop element on each free-swinging crown plate engageable with the fluke unit to limit the swinging path of movement of the respective crown plate between a first position at one side of the fluke unit and a second position away from the fluke unit, said second position of each crown plate being defined by an included angle between the fluke unit and crown plate substantially greater than ninety degrees.

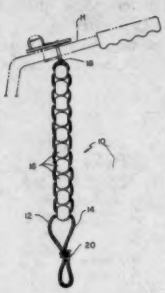
4,210,093

COUNTING DEVICE

Richard A. Baker, 788 Woods La., Grosse Pointe Woods, Mich. 48236

Filed Oct. 23, 1978, Ser. No. 953,483
Int. Cl.[2] G06C *1/00*
U.S. Cl. 116—222 **3 Claims**

1. A counting device comprising a pair of flexible linear elements, a series of beads strung on said linear elements, each bead having a hole therethrough, each linear element passing through the holes in said beads in sequence, one linear element entering the hole in each bead from one end thereof and the other linear element entering such hole from the other end thereof, each linear element passing through the holes in said beads alternately in one direction and the other, said linear



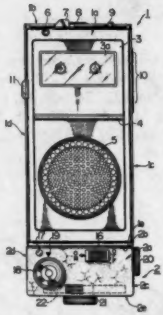
elements together frictionally retaining said beads in any given position along the length thereof.

4,210,094

RADIO TUNER FOR COUPLING WITH CASSETTE TAPE RECORDER

Shiro Kondo, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 741,156, Nov. 11, 1976. This application Jun. 5, 1978, Ser. No. 912,072
Claims priority, application Japan, Apr. 30, 1976, 51-55416; Apr. 30, 1976, 51-55417
Int. Cl.[2] G11B *31/00*; H03J *1/02*
U.S. Cl. 116—255 **1 Claim**



1. A radio frequency tuning device for use in a radio tuner which is adapted to be detachably coupled with a cassette tape recorder, the device comprising a radio frequency selecting dial rotatably disposed adjacent a surface of a tuner casing, a pulley disposed within the tuner casing and having the dial fixedly mounted thereon, a dial operating shaft rotatably mounted on a mounting plate which is fixedly mounted within said tuner casing and extending in a direction perpendicular to a sidewall of said tuner casing which is at right angles to said surface thereof, the free end of said shaft being exposed externally of the sidewall, a dial operating knob secured to the free end of said dial operating shaft, a diverting member fixedly disposed within the casing on the mounting plate in a right-angled corner of said casing defined by said surface and said sidewall of the tuner casing and having a pair of discrete string engaging portions, and a fastening string for coupling said pulley to said dial operating shaft, said fastening string passing around the respective string engaging portions of said diverting member to extend in mutually different directions on the opposite sides thereof, said diverting member comprising:

a rectangular body having a recess formed therein, said

recess being defined by two parallel walls separated by a pillar portion extending therebetween along a direction perpendicular to said two parallel walls, said pillar portion including an arcuate, smooth surface defining one of said pair of string engaging portions; and

a metal rod extending between said two parallel walls along a line perpendicular thereto and spaced from said arcuate, smooth surface, said metal rod defining the other of said pair of string engaging portions.

4,210,095

MACHINE FOR DRAINING PARTS EMERGING FROM HOT GALVANIZING BATHS

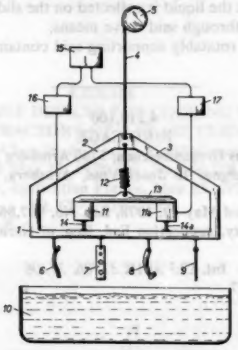
Georges Rouquié, Fontenay le Fleury, France, assignor to Bertin & Cie, Plaisir, France

Division of Ser. No. 785,790, Apr. 8, 1977, Pat. No. 4,129,668. This application Dec. 11, 1978, Ser. No. 968,182

Claims priority, application France, Apr. 12, 1976, 76 10648

Int. Cl.² C23C *1/02*

U.S. Cl. 118—57 **5 Claims**



1. A machine for draining parts emerging from a hot galvanizing bath comprising a support structure including an elastically suspended lifting-beam; means on said beam to rigidly link a plurality of parts to be drained; vibrator means constructed and arranged with said beam to vibrate said plurality of parts; energizer means for said vibrator means including means for controlling the vibrations of said plurality of parts within a frequency range of narrow-band "white noise," the said frequency range covering the natural fundamental frequencies of said parts.

4,210,096

APPARATUS FOR CONTINUOUS ENAMELLING OF TUBES

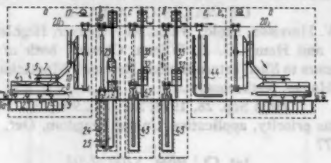
Alexandr A. Sirotinsky, Fergansky proezd, 13, korpus 1, kv. 15; Vladimir I. Prokofiev, ulitsa 14 Parkovaya, 3, kv. 33; Vitaly I. Timonin, Leningradskoe shosse, 7/3, korpus 2, kv. 42, all of Moscow; Nikolai V. Smolnikov, 2 Mikroraion, 73, kv. 15, Shevchenko Mangyshlaxkoi oblasti; Vladimir P. Karyaev, 6 Mikroraion, 3, kv. 42, Shevchenko Mangyshlaxkoi oblasti; Alexei P. Streltsov, 5 Mikroraion, 41, kv. 28, Shevchenko Mangyshlaxkoi oblasti; Jury N. Belov, 5 Mikroraion, 4, kv. 16, Shevchenko Mangyshlaxkoi oblasti; Valentin P. Saveliev, 4 Mikroraion, 9, kv. 20, Shevchenko Mangyshlaxkoi oblasti, and Boris G. Yazikov, 4 Mikroraion, 9, kv. 89, Shevchenko Mangyshlaxkoi oblasti, all of U.S.S.R.

Filed Dec. 5, 1978, Ser. No. 967,259

Int. Cl.² B65G *47/04*; B05C *3/10*

U.S. Cl. 118—58 **3 Claims**

1. An apparatus for the continuous enamelling of tubes comprising: a conveyor for feeding the tubes, an upender in the form of a boom with grippers which serve to receive the tubes from said conveyor and transfer them from the horizontal position into a vertical one, and is installed with provision for displacement; guides placed whereby said boom of said upender are in vertical parallel planes, having at least one guide in every plane and consisting each of more than one portion; a first of said portions running essentially horizontally; a second portion contiguous with the first one and extending at an angle to the horizontal, a third portion running essentially



vertically so that the tube is transferred from the horizontal position into the vertical one, a trolley for receiving the vertically arranged tube which rests on a monorail made up of immovable and movable sections, said movable sections of said monorail, displacing vertically and integral with the tube in carrying out the process of enamelling, means for applying the enamelling slip to at least one side of the tube, and means for heating to dry and fuse the enamelling slip.

4,210,097

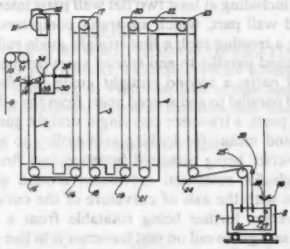
MEANS FOR MAINTAINING A NON-OXIDIZING ATMOSPHERE AT POSITIVE PRESSURE WITHIN THE METALLIC STRIP PREPARATION FURNACE OF A METALLIC COATING LINE DURING LINE STOPS

Fred Byrd, Lebanon, and James A. Fisher, Middletown, both of Ohio, assignors to Armco Inc., Middletown, Ohio

Division of Ser. No. 768,033, Feb. 14, 1977, Pat. No. 4,148,946. This application Jan. 29, 1979, Ser. No. 7,659

Int. Cl.² F27B *9/28*; C23C *1/00*

U.S. Cl. 118—65 **5 Claims**



1. In a coating line for coating a ferrous base metal strip with a molten coating metal, said coating line being of the type having a strip preparation furnace comprising a direct fired furnace with an exhaust system for products of combustion comprising a duct leading from said direct fired furnace to an exhaust fan, a controlled atmosphere heating furnace, at least one cooling chamber and a snout extending beneath the surface of a bath of said molten coating metal, all connected serially in sealed relationship, the improvement comprising an air dilution opening in said duct in the form of a gap in said duct to cool and dilute said products of combustion ahead of said fan, heat resistant door means shiftable between an open position out of said gap and a closed position within said gap to seal said direct fired furnace from said exhaust fan and said air dilution opening, means to shift said door means from said open position to said closed position at the time of a line stop, said door means being thinner than said gap so that said exhaust fan draws ambient air through the upper portion of said gap and over said door means when said door means is in said closed position to

cool said door means, and means at the time of a line stop to introduce a non-oxidizing atmosphere at a positive pressure into said strip preparation furnace to purge said strip preparation furnace and to prevent oxygen from the ambient atmosphere from entering said strip preparation furnace.

4,210,098

APPARATUS FOR TREATING INTERNAL SURFACES OF WALLS OF A TANK

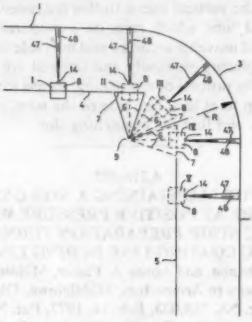
David V. Harrison, Mold, Wales; Roy Weaver, Highland Stockport, and Henry G. E. Wilson, Chester, both of England, assignors to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Filed Sep. 28, 1978, Ser. No. 946,776

Claims priority, application United Kingdom, Oct. 12, 1977, 42467/77

Int. Cl.[2] B05C *5/00, 7/02*

U.S. Cl. 118—317 **9 Claims**



1. An apparatus for treating internal surfaces of the walls of a tank, by spraying an insulating material onto the tank walls or the like, including at least two flat wall parts interconnected by a curved wall part, which apparatus comprises: a trolley for carrying a treating tool; a first straight guide rail for said trolley arranged parallel to and spaced apart from one of the two flat wall parts; a second straight guide rail for said trolley arranged parallel to and spaced apart from the other of the two flat wall parts; a traverser carrying a straight guide rail for the trolley; and means for locking said trolley to said traverser; said traverser being mounted between said first and second guide rails for rotational movement around an axis which coincides with the axis of curvature of the curved wall part; said traverser further being rotatable from a first position wherein said guide rail on said traverser is in line with said first guide rail to a second position wherein said guide rail on said traverser is in line with said second guide rail; and driving means for displacing said trolley along said first guide rail and along said guide rail on said traverser, and further for rotating said traverser from said first position to said second position while said trolley is locked on said traverser and for displacing said trolley along said second guide rail.

4,210,099

FLOATING RECEPTACLE FOR COLLECTING HISTOLOGIC MATERIAL

Peter J. Tsaknis, Mt. Airy, Md., and Virginia J. Lux, Dover, Del., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 900,389, Apr. 26, 1978, Pat. No. 4,158,709. This application Jan. 19, 1979, Ser. No. 4,783

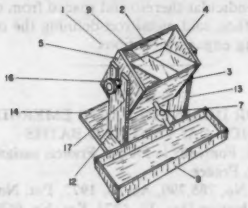
Int. Cl.[2] G01N *1/28*

U.S. Cl. 118—402 **5 Claims**

1. A receptacle for retaining liquid for collecting on a slide histologic material floating on the liquid comprising:

a. Closure means having first and second sides parallelly connected by first and second ends and a bottom;

b. Valve means attached to said container for allowing the release of the liquid in said container; and



c. Means for supporting the slide between said first and second sides on a diagonal whereby histologic material floating on the liquid is collected on the slide by releasing the liquid through said valve means;

d. means for rotatably supporting said container; and

e. slide.

4,210,100

BIRD CAGE

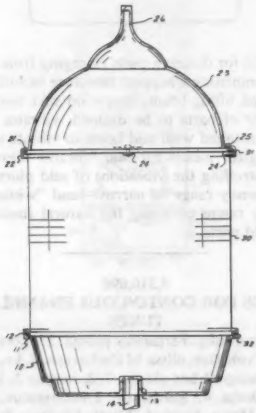
Josef Voss, Haus Dreizehneichen, 5760 Arnsberg 1, Fed. Rep. of Germany, assignor to Josef Voss, Arnsberg, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,866

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805866

Int. Cl.[2] A01K *31/06, 31/08*

U.S. Cl. 119—17 **17 Claims**



1. A collapsible bird-container of the cage type, comprising an elongated barrel of a predetermined height, having a wall bounding the interior of said barrel, an upper open end and a lower open end, a first discrete end closure detachably mounted on said barrel for closing said upper end, said closure being formed with a first bent portion having a tip and being directed upwardly when said closure is installed on said barrel in operative position to increase the interior volume of the container and said closure being adapted to be inverted with said first bent portion and tip directed down and inwardly into said interior when said container is to be collapsed for storage or transport, a second discrete end closure detachably mounted on said barrel for closing said lower end, said second

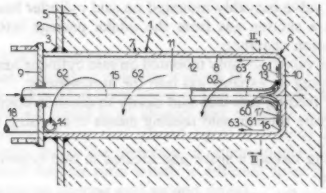
closure also being formed with a second bent portion directed downwardly when said second closure is installed on said barrel in operative position to further increase the interior volume of the container and said second closure also being adapted to be inverted with said second bent portion directed up and inwardly into said interior when said container is to be collapsed for storage or transport, said lower closure also being provided with a recess for receiving a support when the lower closure is installed on said barrel in the operative position, and for receiving said tip when both closures are in said collapsed position; and means for preventing displacement of said closures relative to the barrel and for insuring a stable position of said closures when the latter are inverted and said bent portions extend inwardly into said interior of said barrel, so that the overall height of the container in such a collapsed position is substantially equal to the predetermined height of the barrel.

4,210,101

HEAT EXCHANGE DEVICES FOR COOLING THE WALL AND REFRACTORY OF A BLAST FURNACE

François Touze, Chateau de Logne, 57310 Guenange, France

Filed May 15, 1978, Ser. No. 906,210
Claims priority, application France, May 25, 1977, 77 15939
Int. Cl.[2] F22B *33/00*
U.S. Cl. 122—20 B **6 Claims**



1. a heat exchange device for cooling the wall and the refractory of a blast furnace, comprising:

a closed enclosure, elongated and having a shape of revolution or substantially of revolution, this enclosure comprising an outer end and an inner end,

an axial chamber defining with said enclosure an annular chamber, this axial chamber comprising an outer end and an inner end,

a supply orifice for feeding a cooling liquid into the axial chamber through its outer end,

and a discharge orifice for discharging the cooling liquid from the annular chamber through the outer end of the enclosed enclosure,

deflector means provided between the inner end of the axial chamber and the inner end of the enclosed enclosure, these deflector means being arranged so as to impart to the whole of the flow of the cooling liquid:

an axial component, directed towards the inner end of the enclosed enclosure, for cooling the central part of the inner end of this enclosure,

a radial component for cooling the rest of the inner end of the enclosed enclosure,

an axial component directed towards the outer end of the closed enclosure for causing the return of the cooling liquid,

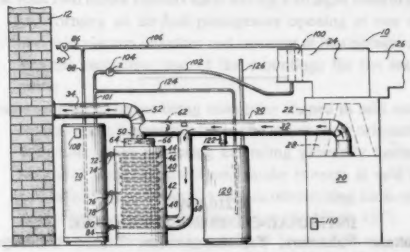
and a tangential component for cooling the part of revolution of the closed enclosure.

4,210,102

SPACE HEATER HEAT RECOVERY SYSTEM

Joseph B. Dosmann, 116 North Hill St., South Bend, Ind. 46601

Filed Nov. 17, 1978, Ser. No. 961,613
Int. Cl.[2] F22B *33/00*; F24D *3/08, 9/02*
U.S. Cl. 122—20 B **8 Claims**



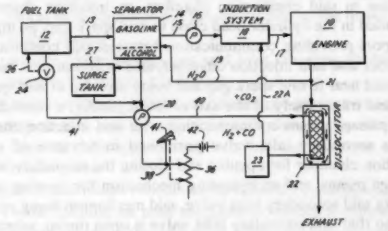
1. In a space heating system having a hot air, fuel fired furnace with a cold air inlet passage and a hot air outlet passage, a heat recovery system: comprising an exhaust pipe for connecting the furnace to a flue, a damper in said exhaust pipe, a heat exchanger unit having a chamber and a set of water coils therein, said heat exchanger unit being located at least in part below said exhaust pipe, a pipe connected to said exhaust pipe on the anterior side of said damper and extending downwardly to the lower portion of said chamber, a pipe connecting the upper part of said chamber with said exhaust pipe on the posterior side of said damper, a water holding tank, upper and lower conduits connecting said tank with said set of coils, a bank of coils in one of said passages of the furnace, a fan for forcing the furnace exhaust gases through said downwardly extending pipe and the chamber in said heat exchanger unit and returning the gases to said exhaust pipe and water supply and return conduits connecting said holding tanks with said bank of coils for heating the air flowing to the space to be heated.

4,210,103

FUEL SYSTEM FOR AND A METHOD OF OPERATING A SPARK-IGNITED INTERNAL COMBUSTION ENGINE

Edward Dimitroff, and John A. Vitkovits, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 4, 1977, Ser. No. 784,414
Int. Cl.[2] F02B *47/04*
U.S. Cl. 123—1 A **34 Claims**



1. In a fuel system for a spark-ignited internal combustion engine having an induction system in which gasoline may be atomized, an exhaust, and means for supplying gasoline to a carburetor in the induction system for atomization; the improvement comprising a thermal pyrolysis chamber in heat exchange relation with the exhaust gases, means for circulating a liquid hydrocarbon alcohol of from 1 to 3 carbon atoms through the chamber in order to dissociate said alcohol into

vapors including hydrogen, carbon monoxide and carbon dioxide in the absence of compressed air and solely in response to such heat and without need for catalysts, and then supplying the vapors to the induction system for mixing with the atomized gasoline to provide a fuel for the engine.

4,210,104

INTERNAL COMBUSTION ENGINE

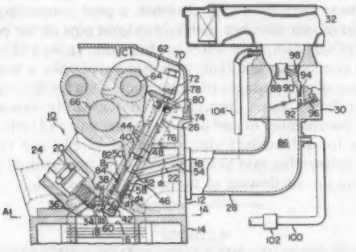
Hirokazu Nakamura, Saganosaganodan; Tsuneo Ohinouye, Kyoto; Kenji Hori; Yuhiko Kiyota, both of Nagaokakyo; Tatsuro Nakagami, Kyoto; Yutaka Tsukamoto, Johyoh, and Katsuo Akishino, Kameoka, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1976, Ser. No. 742,244

Claims priority, application Japan, May 19, 1976, 51-57595

Int. Cl.² F02B *75/02*

U.S. Cl. 123—259 **13 Claims**



1. An internal combustion engine comprising a cylinder, a cylinder head for said cylinder providing a combustion chamber having inlet and exhaust ports, a main inlet passage for supplying an air-fuel mixture formed by a mixture forming means to said inlet port, a throttle valve provided in said main inlet passage, a spark plug threadedly fixed in said cylinder head and having a spark gap disposed at a predetermined position in said combustion chamber, an injection chamber provided in the cylinder head close to said spark gap, an injection port providing communication between said combustion chamber and said injection chamber, said injection port being disposed near to said spark gap and being directed at said spark gap and transversely of the axis of said cylinder, a secondary inlet passage means communicating with said injection chamber, a secondary inlet valve positioned in advance of said injection chamber for opening and closing the secondary inlet passage means, and an operating mechanism for opening and closing said secondary inlet valve, said mechanism being operated so that said secondary inlet valve is open during substantially the entire suction stroke of the engine, said injection port being positioned to discharge gas in said injection chamber substantially toward said spark gap so that gas is strongly injected toward or around said spark gap due to high negative pressure produced in said combustion chamber during a suction stroke of the engine, the discharge of gas from said port creating turbulence in said combustion chamber and scavenging previously formed exhaust gases from the region of said gap.

4,210,105

INTERNAL COMBUSTION ENGINE INJECTED ACCUMULATION CHAMBER

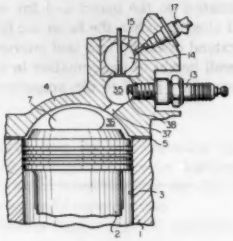
Hidetaka Nohira, Mishima; Sumio Ito, Susono, and Hisashi Oki, Numazu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 11, 1978, Ser. No. 905,016

Claims priority, application Japan, Jan. 17, 1978, 53-2676

Int. Cl.² F02B *3/00*; F02D *39/02*

U.S. Cl. 123—277 **8 Claims**



1. An internal combustion engine having an intake passage and an exhaust passage, comprising:

a cylinder block having a cylinder bore therein;

a cylinder head mounted on said cylinder block and having a fixed-volume, non-cooled cavity therein;

a piston reciprocally movable in said cylinder bore;

a combustion chamber formed between said cylinder head and said piston, said cavity having a port connected to said combustion chamber;

an intake valve movably mounted on said cylinder head for leading a suction gas from the intake passage into said combustion chamber;

an exhaust valve movably mounted on said cylinder head for discharging an exhaust gas into the atmosphere;

means for feeding fuel into said cavity to create a combustible mixture therein, said feeding means comprising a fuel injector;

a spark plug having a spark gap located in said combustion chamber;

valve means for opening said port of the cavity once per cycle during the compression stroke to spout out a jet of the combustible mixture under pressure into said combustion chamber from said cavity during the first half of the compression stroke and permit the inflow of the suction gas into said cavity from said combustion chamber during the latter half of the compression stroke for temporarily accumulating the suction gas under pressure after said port is closed; and

a fuel injection control device for starting the injecting operation of said fuel injector immediately after said valve means is closed.

4,210,106

METHOD AND APPARATUS FOR REGULATING A COMBUSTIBLE MIXTURE

Wolf Wessel, Oberriexingen, and Wilfried Sautter, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 732,124, Oct. 13, 1976, abandoned. This application May 30, 1978, Ser. No. 910,916

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1975, 2545759

Int. Cl.² F02B *3/00*

U.S. Cl. 123—489 **6 Claims**

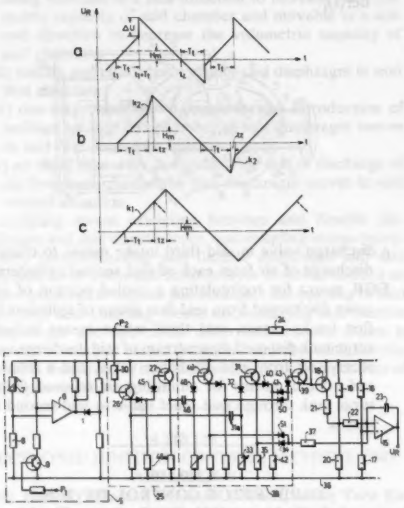
6. In a method for regulating the fuel-air mixture of an internal combustion engine which includes the steps of:

sensing the oxygen content of the exhaust gases of the engine and providing a first signal;

feeding said first signal to an integrating controller to generate a second signal which is used to regulate the fuel quantity delivered to the engine;

the improvement comprising the steps of:

delaying the arrival of said first signal to said integrating controller to alter said second signal by permitting said controller to continue to operate in its previous direction



for a predetermined period of time after said first signal has undergone polarity reversal thereby simulating a different control point value of said first signal, wherein said second signal is so altered that during a predetermined period of time said second signal is abruptly increased in slope and in the direction of attaining said average regulated fuel-air ratio which is different from that obtained without altering said second signal.

4,210,107

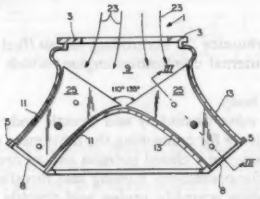
TUNEABLE INTAKE MANIFOLD

Donald J. Shaffer, Box 88, Upper Strasburg, Pa. 17265

Continuation of Ser. No. 760,402, Jan. 18, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,930

Int. Cl.[2] F02B *17/18*

U.S. Cl. 123—52 M **12 Claims**



1. An intake manifold for a reciprocating piston internal combustion engine having at least two combustion cylinders arranged in a V-shape with respect to a cross-section perpendicular to a crank shaft, comprising:

a planar intake mounting for at least one air-fuel mixture device;

opposed planar mountings for the intake valve ports of said cylinders;

a plenum chamber adjacent said air-fuel mixture intake mounting to directly receive the air-fuel mixture from said air-fuel mixture device;

at least two intake runners each having a straight central axis and forming an air-fuel passageway opening at one end into said plenum chamber and opening at its opposite end into the respective one of the mountings for the intake ports;

said plenum chamber being triangular shaped in said cross-section taken perpendicular to the crank shaft orientation with said intake mounting extending generally horizontally and the openings of said intake runners at said one end extending in respective planes intersecting each other at an obtuse angle within the range of 110° to 135°;

said plenum chamber being defined by two planar, solid, triangular end walls parallel to each other and perpendicular to the crank shaft orientation, two opposed, planar, rectangular side walls joined to each other along a common side edge and having their opposite end edges joined to respective ones of said triangular end walls, and a planar, rectangular, horizontal top wall joined at its edges respectively to said side wall and end wall remaining edges;

said side walls having therein said openings of said intake runners and said top wall having therein said intake mounting;

the planes of said side walls intersecting each other at an obtuse angle within the range of 110° to 135°;

a central generally horizontal plate rigidly interconnecting said mountings for the intake valve ports so that they are generally parallel to respective ones of said side walls;

the cross-sectional shape of each of said intake runners taken perpendicular to its central axis being substantially rectangular throughout its length; and

said passageway central axes extending generally perpendicular to the plane of their plenum chamber openings at the one end and generally perpendicular to the plane of their intake port openings at the opposite end, respectively.

2. An intake manifold for an engine having at least two working cylinders with respective valve intake ports, comprising:

an inlet coupling at one end of the manifold for connection to a source of working fluid and at least two outlet couplings at an opposite end for connection to the intake port of the engine;

a plenum chamber adjacent said inlet coupling to directly receive the working fluid from said source;

at least two intake runners each forming a passageway opening at one end directly into said plenum chamber and opening at its opposite end into the respective one of the intake ports;

each of said intake runners being defined by and having side walls forming an inlet passageway having a central axis extending along the path of air flow from the passageway;

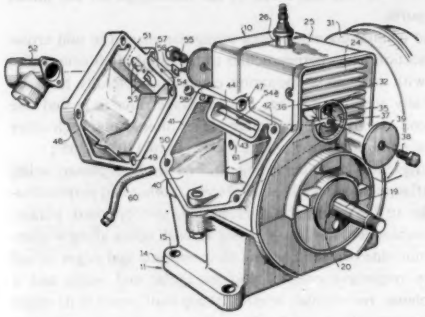
at least a portion of one of said walls of each said passageways being mounted for movement towards and away from said central axis of its passageway to effectively decrease and increase the through flow cross-sectional area as measured in a plane perpendicular to said axis, respectively; and

means for maintaining said movable wall in an adjusted position.

4,210,108
STEPPED PISTON TWO-STROKE ENGINES

Bernard Hooper, Maybank House, Hope St., Wordsley, Stourbridge, W. Midlands, England

Filed Sep. 21, 1978, Ser. No. 944,566
Claims priority, application United Kingdom, Sep. 22, 1977, 39510/77
Int. Cl.[2] F02B 75/02
U.S. Cl. 123—65 S 13 Claims



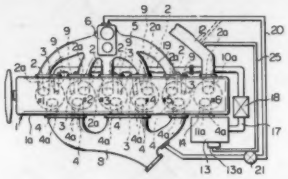
1. A two-stroke internal combustion engine comprising a cylinder casting, a bore formed in said casting to provide a cylinder containing a stepped piston, the cylinder and piston having a pumping part of larger diameter and a working part of smaller diameter, exhaust port means in said working part, and opposed transfer port means on opposite sides of said working part disposed symmetrically about a plane passing through the longitudinal axis of the cylinder and the centre of the exhaust port means, the transfer port means extending to the exterior of the casting and opening into respective first recesses to form receiver volumes, the transfer port means and first recesses being of a form to be produced in the casting process by non-separate cores introduced linearly towards said plane, said receiver volume being arranged to receive, in use, through said transfer port means a charge from the pumping part of the cylinder and to deliver through said transfer port means the charge to the working part of the cylinder, the piston being provided with recess means which co-operate with the transfer port means to allow and control entry of the charge into said receiver volumes, the piston also co-operating with the transfer port means to allow and control entry of charge from said receiver volumes to the working part of the cylinder.

4,210,109
MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Yasuo Nakajima, Yokosuka; Michio Onoda, Yokohama; Kunihiko Sugihara, Takasho, and Shinichi Nagumo, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 1, 1977, Ser. No. 856,533
Claims priority, application Japan, Dec. 2, 1976, 51/145126
Int. Cl.[2] F02D 33/02
U.S. Cl. 123—76 17 Claims

1. A multi-cylinder internal combustion engine comprising:
a cylinder block having a plurality of cylinders consisting of a first group of cylinders and at least one second cylinder;
a cylinder head secured to said cylinder block to close said cylinders;
a plurality of pistons slidably disposed in said plurality of cylinders, respectively, for reciprocal movement therein;
a first intake means for inducting air/fuel mixture into said first group of said cylinders;
an exhaust means for discharging exhaust gas from said first group of said cylinders;
a second intake means for inducting ambient air into said second cylinder;
a third intake means for admitting air discharged from said second cylinder into said first group of said cylinders, so as to scavenge hot residual exhaust gases from said first group of said cylinders;
an intake valve in said second intake means to control the induction of ambient air into each of said second cylinder(s);

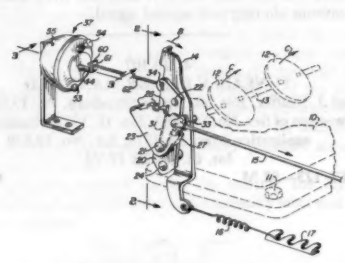


a discharge valve in said third intake means to control the discharge of air from each of said second cylinders; and
EGR means for recirculating a cooled portion of exhaust gases discharged from said first group of cylinders to said first intake means, said third intake means including a surge tank disposed downstream of said discharge valve to receive air from said discharge valve, and a relief valve and conduit means for admitting air relieved from said surge tank through said relief valve to said second intake means.

4,210,110
CARBURETOR CONTROL DEVICE

Lawrence J. Krebaum, 4501 W. Gardenia, Glendale, Ariz. 85301, and Gerald E. Krebaum, 12666 N. Columbine Dr., Phoenix, Ariz. 85029

Continuation-in-part of Ser. No. 700,456, Jun. 28, 1976, abandoned. This application Aug. 8, 1977, Ser. No. 822,896
Int. Cl.[2] F02D 11/08
U.S. Cl. 123—319 2 Claims



1. In a carburetor for controlling the air/fuel mixture available to an internal combustion engine, which carburetor includes,
a throttle body,
a throttle valve carried by said throttle body,
a throttle lever for controlling the movement of said throttle valve between a closed position and an open position,
a linkage for operatively moving said throttle lever, and
biasing means normally urging said throttle to the closed position,
an improved device for modulating the rate of opening of said throttle valve during opening movements of said linkage and for dampening rapid or erratic opening movements of said linkage, said improved device comprising:
(a) a resiliently deformable member for receiving and storing energy in response to opening movement of said linkage

and for transmitting said energy to said throttle lever for opening said throttle valve;

(b) pneumatic restrictor means opposing the movement of said throttle lever and regulating the speed at which said throttle valve opens, said restrictor including:

(i) a hollow housing;

(ii) a flexible diaphragm hermetically sealed to said housing to form an airtight chamber therein, said diaphragm being movable in a first direction to increase the volumetric capacity of said chamber and movable in a second direction to decrease the volumetric capacity of said chamber;

(iii) biasing means normally urging said diaphragm in said first direction;

(iv) one-way check valve means for the introduction of ambient air into said chamber as said diaphragm moves in said first direction; and

(v) air bleed means for controlling the rate of discharge of air from said chamber as said diaphragm moves in said second direction.

(c) coupling means extending between said flexible diaphragm and said throttle lever, said coupling means operatively interconnecting said flexible diaphragm and said throttle lever when said throttle lever is moved toward an open position, to oppose and modulate the opening of said throttle, said coupling means disconnecting said flexible diaphragm and said lever when said throttle means is moved toward a closed position whereby said throttle lever is free to move to said closed position independent of said pneumatic restrictor.

4,210,111

ELECTRONIC IGNITION CONTROL METHOD AND APPARATUS

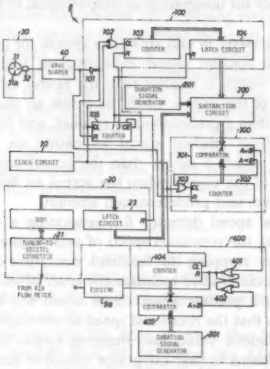
Tadashi Hattori, Okazaki; Mamoru Kobashi, Aichi; Toru Kawase, Toyota, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 27, 1978, Ser. No. 872,778

Claims priority, application Japan, Feb. 1, 1977, 52/10385

Int. Cl.[2] F02D *5/04*

U.S. Cl. 123—414 **8 Claims**



1. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization of the primary winding thereof and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion chamber of said engine so as to operate said piston, the control apparatus comprising:

a reference signal generator for producing a reference signal corresponding to the top dead center position of said piston;

first means for producing a first digital output signal indicative of the amount of air sucked into said combustion chamber;

second means for producing a second digital output signal indicative of a predetermined period of time necessary for generating the spark voltage in said ignition coil;

third means for producing a third digital output signal indicative of a cycle time of said reference signal in response to a following reference signal;

memory means for storing a data indicating an optimum period of time for spark advance in relation to the amount of sucked air, said memory means being responsive to said reference signal for producinhg a fourth digital output signal indicative of an optimum period of time for spark advance relative to said first output signal;

a calculation circuit for subtracting the period of times defined by said second and fourth output signals from the cycle time defined by said third output signal to produce a fifth digital output signal indicative of a period of time corresponding to a subtracted-resultant value;

fourth means responsive to said reference signal for producing a timing signal in accordance with said fifth output signal; and

fifth means responsive to said timing signal for maintaining electric power supply from a source of electricity to the primary winding of said ignition coil within the predetermined period of time defined by said second output signal.

4,210,112

ELECTRONICALLY CONTROLLED EXHAUST GAS RECIRCULATION SYSTEM IN INTERNAL COMBUSTION ENGINE

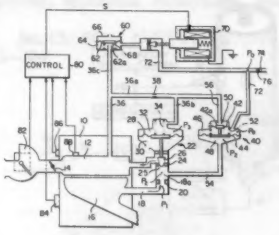
Koyo Nakamura, and Hastuo Nagaishi, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 20, 1978, Ser. No. 971,493

Claims priority, application Japan, Dec. 28, 1977, 52-159577

Int. Cl.[2] F02M *25/06*

U.S. Cl. 123—571 **7 Claims**



1. A system for recirculation of exhaust gas in an internal combustion engine provided with an intake passage and an exhaust passage, the system comprising:

means for defining a recirculation passage interconnecting said exhaust passage to said induction passage to recirculate a portion of the engine exhaust gas;

a metering orifice of a fixed area formed in said recirculation passage;

vacuum operated valve means for controlling an effective cross-sectional area of said recirculation passage at a section downstream of said metering orifice;

pressure modulation means for modulating a vacuum produced in said induction passage with air based on a comparison between a signal negative pressure and an exhaust gas pressure in a control section of said recirculation passage between said metering orifice and said valve means thereby to produce a control negative pressure to operate said valve means;

a conduit which connects said induction passage to said

pressure modulation means to transmit said vacuum and has an air admission port opening into the atmosphere, said signal negative pressure being produced by modulation of a negative pressure in said conduit with atmospheric air admitted into said conduit through said air admission port;

an electromagnetic valve provided to said conduit at a section between said induction passage and said air admission port so as to vary the magnitude of a negative pressure at said air admission port of said conduit thereby to vary the magnitude of said signal negative pressure;

a plurality of sensors each for sensing a parameter of engine operating conditions and producing an electrical signal representing the sensed parameter; and

electronic control means for providing a control signal to said electromagnetic valve to control the magnitude of said signal negative pressure and hence the magnitude of said control negative pressure such that said exhaust gas pressure is regulated to a value corresponding to an optimum rate of exhaust gas recirculation under an engine operating condition indicated by the signals produced by said sensors, said optimum rate of exhaust gas recirculation being prescribed in an exhaust gas recirculation rate control pattern memorized in said control means.

4,210,113

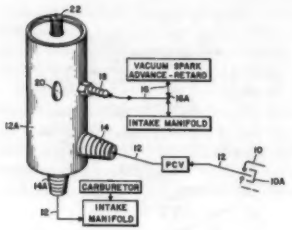
VACUUM VALVE FOR INTRODUCTION OF CONTROLLED AMOUNTS OF AIR INTO ENGINE SYSTEMS

Patrick M. Heffernan, Scottsdale, Ariz., assignor to Sumari Engineering, Inc., Phoenix, Ariz.

Filed Feb. 23, 1979, Ser. No. 14,624

Int. Cl.[2] F02M *25/00*

U.S. Cl. 123—574 **26 Claims**



1. An air valve especially adapted for use with internal combustion engines having a carburetor, a crankcase ventilation system, and an intake manifold comprising, in combination, a valve body, movable plunger valve means located within said valve body for closing off air to the intake manifold during engine idling conditions and for controlling air into the intake manifold for engine operations above idle, first vacuum line means connected to the interior of said valve body from said intake manifold, conduit means connected to the interior of said valve body for communication between said first vacuum line means and the crankcase ventilation system, an air inlet means connected to the interior of said valve body for supplying air into said intake manifold through said first vacuum line means, and second vacuum line means connected to the interior of said valve body for operating said movable plunger valve means to close off air supplied by said air inlet means to the intake manifold during engine idling conditions and for controlling air into the intake manifold for engine operations above idle.

4,210,114

AIR-FUEL RATIO CONTROL APPARATUS FOR AN INTERNAL COMBUSTION

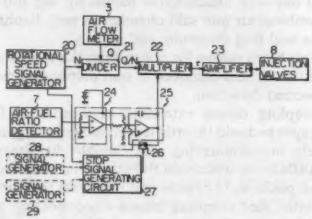
Haruo Watanabe, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1978, Ser. No. 866,800

Claims priority, application Japan, Mar. 7, 1977, 52/026214[U]

Int. Cl.[2] F02B *33/00*

U.S. Cl. 123—489 **4 Claims**



1. An air-fuel ratio control apparatus for an internal combustion engine having an air intake system, an exhaust system, and at least one fuel injection valve in said air intake system, said apparatus comprising:

an air-fuel ratio detector in said exhaust system of said engine for detecting the air-fuel ratio of the exhaust gas;

a feedback circuit for generating a correction signal in accordance with said detected signal of said air-fuel ratio detector, said feedback circuit comprising a comparator for comparing a voltage of said detected signal of said air-fuel ratio detector with a reference voltage, and an integrator for integrating an output signal of said comparator;

an air flow meter in said air intake system for generating an air flow amount signal indicating an intake air flow amount which is smaller than the acutal intake air flow amount of the engine when the actual air flow amount is smaller than a predetermined amount, and for generating an air flow amount signal indicating an intake flow amount which is larger than the actual intake air flow amount of the engine when the actual air flow amount is larger than said predetermined amount;

a rotational speed detector for generating a speed signal indicating the rotational speed of said engine;

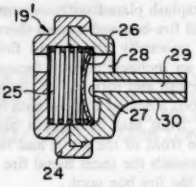
a circuit for stopping the feedback operation of said feedback circuit so as to maintain the level of said correction signal at a predetermined level when the speed signal indicates that the rotational speed of the engine exceeds a predetermined value, said stopping circuit comprising a switch means in said integrator which is actuated when the speed signal indicates that the rotational speed of the engine exceeds a predetermined value so that an integration operation is stopped and the correction signal having said predetermined level is generated from said feedback circuit; and

a control circuit for calculating an amount of fuel to be injected from said injection valve into said engine by using said air flow amount signal, said speed signal, and said correction signal, and for controlling the injection operation of said injection valve in accordance with said calculated amount of fuel.

4,210,115
WARM AIR INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kengi Nishibori, Nagoya; Fumio Hayashi, Toyata, and Tadashi Ogawa, Kariya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 20, 1978, Ser. No. 917,243
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D 2 Claims



1. A warm air intake system for an internal combustion engine, comprising:

(a) an air intake passage;

(b) a change-over valve having a damper element being movable between a first shift position for connecting the air intake passage substantially exclusively to a cold air source and a second shift position for connecting the air intake passage substantially exclusively to a warm air source;

(c) a diaphragm means having a diaphragm chamber for shifting said damper element between said first and second shift positions, the position of said damper element depending on whether intake vacuum of the engine or atmospheric pressure is supplied to said diaphragm chamber;

(d) a vacuum passage conducting intake vacuum of said engine to said diaphragm chamber; and

(e) a thermostat valve responsive to the temperature of the air flowing through said air intake passage, having a port passage which connects said vacuum passage to the atmosphere, and a temperature- sensitive valve element which shifts between one position fully opening said port passage and another position fully closing said port passage, said valve element comprising a disc element the shape of which depends on said air temperature in such a manner that when said air temperature increases the temperature of said disc element above a first predetermined value, the disc has a curved shape and when said air temperature decreases the temperature of the disc element below a second predetermined value, which is substantially lower than the first predetermined value, the disc has a flattened shape.

4,210,116
ELECTROMAGNETICALLY ACTUATED PUMPS

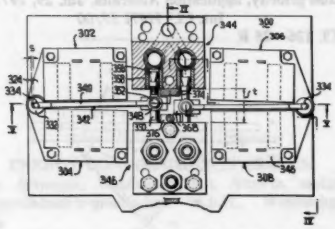
Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Hengelo, Netherlands

Division of Ser. No. 560,771, Mar. 21, 1975, Pat. No. 4,022,174, and Ser. No. 416,852, Nov. 19, 1973, Pat. No. 4,044,745, and a continuation-in-part of Ser. No. 452,549, Mar. 19, 1974, Pat. No. 3,994,272, and Ser. No. 452,619, Mar. 19, 1974, Pat. No. 3,943,892. This application Feb. 7, 1977, Ser. No. 766,549
Claims priority, application Netherlands, Mar. 22, 1974, 7403913; Mar. 22, 1974, 7403914; Mar. 22, 1974, 7403915; Mar. 22, 1974, 7403916; Mar. 22, 1974, 7403917; Mar. 22, 1974, 7403918; Jul. 11, 1974, 7409428; Aug. 13, 1974, 7410855
Int. Cl.[2] F02M *51/04*
U.S. Cl. 123—504 42 Claims

1. An injector system for delivering fuel to a combustion engine, comprising in combination:

a pair of fuel pumps and connecting means for maintaining said pumps in spaced, fixed relation to each other, said pumps presenting mutually opposed and aligned bores;

a double-ended piston assembly having displacer bodies at its opposite ends received respectively in said bores and a coupling member connecting said displacer bodies, said bores having inlet means and outlet means for inducting and discharging fuel in response to reciprocation of said piston assembly;



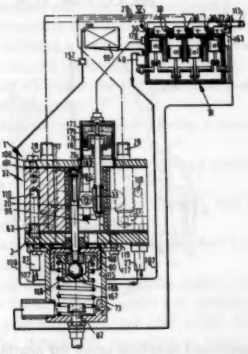
means operating in the space between said pumps for reciprocating said piston assembly; and

control means for controlling the stroke of said piston assembly, said control means comprising a pair of stop members disposed in the path of said piston assembly and delineating the stroke thereof, at least one of said stop members being movable to vary said stroke.

4,210,117
DEVICE FOR SUPPLYING FUEL TO A COMBUSTION ENGINE AND METHOD OF MANUFACTURING SAID DEVICE

Willem Brinkman, Velp, Netherlands, assignor to Holec, N.V., Helgelo, Netherlands

Division of Ser. No. 760,718, Jan. 19, 1977, Pat. No. 4,164,920. This application Jun. 15, 1978, Ser. No. 915,792
Claims priority, application Netherlands, Jun. 28, 1976, 7607080
Int. Cl.[2] F02M *39/00*; F04B *17/04*
U.S. Cl. 123—504 15 Claims



1. A device for delivering fuel to at least one atomizer of a combustion engine, in which the pump chamber in a pump housing of at least one fuel pump has a displacement volume adjustable by actuating means, is communicating through an inlet valve with a fuel supply and through an outlet valve with a fuel delivery part to be connected with the atomizer of the combustion engine and is limited by at least one displacer body reciprocated by driving means, said actuating means being coupled with a barometer bellows, characterized in that the

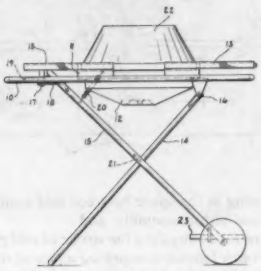
barometer bellows have an internal pressure substantially lower than the atmospheric pressure.

4,210,118

COLLAPSIBLE BARBECUES

Frederick C. Davis, and Richard L. Beer, both of Box Hill, Australia, assignors to Companion Pty. Limited, Box Hill, Australia

Filed Jul. 28, 1978, Ser. No. 928,892
Claims priority, application Australia, Jul. 29, 1977, 1044/77
Int. Cl.[2] H47I *37/00*
U.S. Cl. 126—25 R **3 Claims**



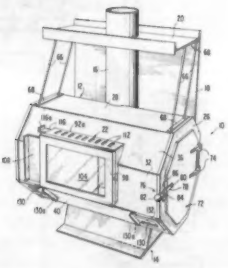
1. A portable cooking appliance comprising means for cooking food thereon including a metal grill and support frame for said grill, pivotable legs supporting the frame, said legs being pivotably joined together to move with a scissor like action, the legs being pivotably connected to said support frame an over-centre link to form a four bar linkage, the arrangement being such that the legs are movable between a folded and unfolded position, said legs being held in unfolded position by releasable latching means.

4,210,119

SHEET METAL FIREPLACE STOVE WITH IMPROVED DRAFT

Duane P. Kincaid, Rte. 1, Box 471, Sandpoint, Id. 83864

Filed Jul. 7, 1977, Ser. No. 813,580
Int. Cl.[2] F24C *1/14*
U.S. Cl. 126—61 **8 Claims**



1. An improved fireplace stove for heating a building or the like comprising:

a sheet metal fire box, said fire box comprising laterally spaced, vertically extending sheet metal end walls, said end walls being of polygonal shape, and vertically spaced top and bottom walls extending horizontally between said end walls, a vertical rear wall extending between said end walls, front and rear lower inclined sidewalls extending between said end walls and being inclined upwardly and outwardly from respective edges of said horizontal bottom wall, said rear lower inclined sidewall being joined to the lower edge of said vertical rear wall, a rear upper inclined sidewall extending between said end walls and being inclined downwardly and rearwardly from the edge of said top wall and being joined thereto to the upper edge of the rear wall,

fire brick lining the inner surface of said bottom wall and at least portions of adjacent inclined lower sidewalls,

a flue stack fixed to said sheet metal fire box, being open to the fire box interior at the bottom thereof and extending vertically above said top wall at the rear of said stove,

a metal backsplash plate fixedly mounted to the rear of said sheet metal fire box and spaced therefrom and extending vertically upwardly above said fire box top wall and including an inclined portion facing the lower rear inclined sidewall and forming on the exterior of said sheet metal fire box a heated air flow path for air flow upwardly and away from said backsplash plate to convect heat toward the front of the stove and the flow of relatively cool air beneath the sheet metal fire box to maintain the bottom of the fire box cool,

fan means for forcing air between said sheet metal fire box and said metal backsplash plate and for forcibly causing air to flow upwardly and away from the back splash plate and downwardly beneath said sheet metal fire box,

means for introducing combustion air flow into the interior of the sheet metal fire box at said lower front inclined sidewall to further cool the bottom of the sheet metal fire box during operation of said stove, and

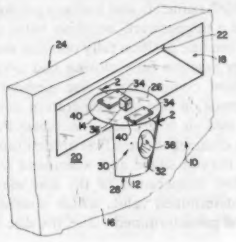
door means carried by said sheet metal fire box permitting access to the interior and placing of solid fuel onto said fire box for maintaining a fire therein.

4,210,120

FURNACE PEEP SIGHT

Branco Ritopecki, 959 Mohawk Rd., E., Hamilton, Ontario, Canada (L8T 2R9)

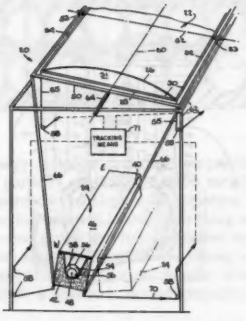
Filed Aug. 15, 1978, Ser. No. 933,740
Int. Cl.[2] F23M *7/00*
U.S. Cl. 126—200 **7 Claims**



1. A furnace peep sight comprising a body having an upper surface, a lower surface, a surface of revolution, said upper surface and said lower surface being disposed in spaced apart relationship, said surface of revolution located intermediate said upper surface and said lower surface, said body having a longitudinal axis extending between said upper surface and said lower surface, a passageway, said passageway communicating between the ends thereof along a straight line, said ends of said passageway located in said surface of revolution, said body being journaled for rotation to a wall of a furnace along a longitudinal axis of said body, said longitudinal axis to said body passing through said upper surface and said lower surface, said furnace having another passageway therein, whereby said passageway may be coaxially aligned to said passageway of said furnace, said body having a pair of passageways therein communicating only to said upper surface, said pair of passageways each having a lining, said lining comprises a thermally insulating material, said lining defining an inner passageway

therein, said lining having a pair of opposed openings therein, said pair of opposed openings juxtaposed with said passageway of said body, a cover plate, said cover plate removably affixed to said upper surface, said cover plate being disposed covering an opening to at least one of said pair of passageways of said body when said cover plate is affixed to said upper surface, said lining of each of said pair of passageways having a sight glass being disposed therein, whereby said pair of passageways of said body are disposed in spaced apart parallel relationship, and whereby said passageway of said body may be rotated having the longitudinal axis thereof out of coaxially alignment with said passageway of said furnace.

4,210,121
SOLAR ENERGY COLLECTION
Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021
Filed Jun. 15, 1977, Ser. No. 806,291
Int. Cl.[2] F24J *3/02*; G02B *1/06*
U.S. Cl. 126—424 **19 Claims**

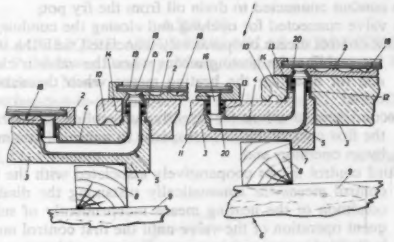


1. A lens system for concentrating solar energy comprising at least three lenses, a first of said lenses being an elongated lens located centrally of the others of said lenses and having an elongated focus, the others of said lenses being elongated Fresnel-type lenses having longitudinal microprisims, and elongated foci, said Fresnel-type lenses being positioned and said microprisims being arranged so that the foci of said Fresnel-type lenses are substantially coextensive with said focus of said lens, and means for interconnecting said lenses for tracking movement, whereby the foci of said lenses remain substantially coextensive during tracking of the sun.

4. Apparatus for collecting and concentrating solar energy comprising in combination collector means characterized by elongated conduit means comprising a plurality of conduits each containing a fluid therein, said conduits being arranged such that at least two fluids in the conduits are contiguous, and fluid lens means for concentrating the solar energy along an elongated focus at said collector means located substantially in or on and substantially along at least one of the conduits, said fluid lens means comprising a solar-energy transmitting lens fluid and opposed solar energy transmitting plates enclosing said lens fluid, said lens plates being spaced and said lens fluid being chosen to absorb a minimum amount of infrared solar energy, said lens fluid being chosen from the group consisting of solvents, hydrocarbons, and salt and water solutions, said lens fluid having an index of refraction of greater than about 1.35, and said lens means further selectively comprising means for protecting lens plates otherwise corroded by said lens fluid.

5. Apparatus for collecting and concentrating solar energy comprising in combination collector means characterized by elongated conduit means comprising a plurality of conduits each containing a fluid therein, said conduits being arranged such that at least two fluids in the conduits are contiguous, and fluid lens means for concentrating the solar energy along an elongated focus at said collector means located substantially in or on and substantially along at least one of the conduits, said fluid lens means comprising a solar-energy transmitting lens fluid and opposed solar energy transmitting plates enclosing said lens fluid, said lens plates being spaced and said lens fluid being chosen to absorb a minimum amount of infrared solar energy, said lens fluid being chosen from the group consisting of solvents and hydrocarbons including trichlorethylene and toluene, said lens means further selectively comprising means for protecting lens plates otherwise corroded by said lens fluid.

4,210,122
ENERGY CONVERSION APPARATUS
Wolfgang Artweger, Windischgarsten, Austria, assignor to Artweger-Industrie-gesellschaft m.b.H., Windischgarsten, Austria
Filed Aug. 10, 1977, Ser. No. 823,497
Claims priority, application Austria, Aug. 11, 1976, 5982/76; Aug. 11, 1976, 5983/76; Aug. 11, 1976, 5984/76
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—432 **26 Claims**



1. A modular energy conversion apparatus for converting solar into thermal energy, comprising a plurality of detachably interconnected modules, each module comprising

(a) an energy conversion unit arranged for exposure to solar radiation and defining a cavity capable of receiving a heat carrier fluid, the unit including

(1) an inlet and an outlet for the fluid in communication with the cavity, and

(2) the inlet and the outlet each having a coupling part, and

(b) a mounting element carrying the energy conversion unit and including

(1) a conduit portion embedded therein, and having an inlet and an outlet end,

(2) the inlet and outlet ends of the conduit portion each having a coupling part,

(3) the inlet end coupling part and the outlet coupling part, on the one hand, and the outlet end coupling part and the inlet coupling part, on the other hand, being matched for detachable assembly to form detachable joints between respectively registering pairs of the coupling parts for detachably assembling the energy conversion unit and the mounting element, and

(4) one of the detachable joints detachably assembling adjacent ones of the mounting elements, registering ones of the coupling parts forming the one detachable joint, the conduit portions detachably joined to the cavities forming a conduit system for the heat carrier fluid to and from the cavities.

4,210,123

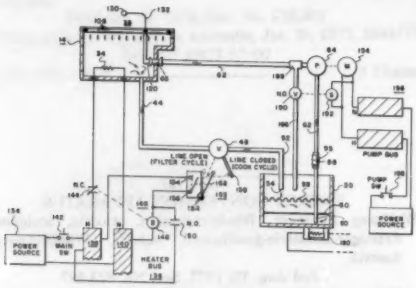
FILTER SYSTEM FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,080

Int. Cl.[2] A47J 27/00

U.S. Cl. 126—374 1 Claim



1. Frying apparatus comprising:
a fry pot for containing cooking oil;
means for heating the oil;
a conduit connected to drain oil from the fry pot;
a valve connected for opening and closing the conduit;
first control means cooperatively associated with the valve for enabling the heating means when the valve is closed and for disabling the heating means when the valve is open;
second control means for selectively enabling or disabling the first control means in response to a manual command by an operator; and,
third control means cooperatively associated with the first control means for automatically sustaining the disabled condition of the heating means independently of subsequent operation of the valve until the first control means is disabled in response to a manual command by an operator.

4,210,124

DISH FOR HOLDING FOOD TO BE HEATED IN A MICROWAVE COOKING CHAMBER

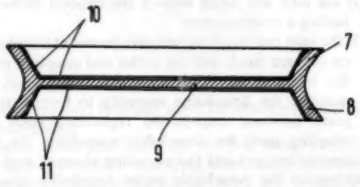
Julius Husslein, Vachendorf, and Wilhelm Hertel, Traunreut, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 746,335, Dec. 1, 1976, Pat. No. 4,143,647. This application Dec. 22, 1978, Ser. No. 972,250

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1975, 2555344

Int. Cl.[2] A47J 27/00

U.S. Cl. 126—390 2 Claims



1. A dish for holding food to be heated in a microwave cooking chamber comprising a dish bowl, a base extending down from said dish bowl, said base forming the side wall of a second dish bowl arranged substantially mirror-symmetrically to said first dish bowl, said first dish having its inner surface covered with a high-frequency radiation coating, and said second dish bowl having its inner surface covered with a high-frequency radiation-reflecting coating.

4,210,125

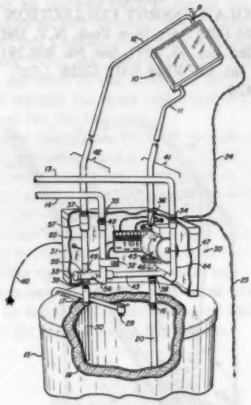
WATER FLOW CONTROLLER DEVICE

William H. Fender, San Diego, Calif., assignor to Solardyne, Inc., San Diego, Calif.

Filed Aug. 14, 1978, Ser. No. 933,514

Int. Cl.[2] F24J 3/02

U.S. Cl. 126—437 9 Claims

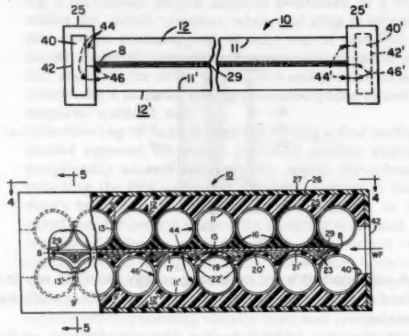


1. A Water Flow Controller Device of the type used for connecting a solar collecting device to conventional facility plumbing and a water reservoir, which comprises:
(a) a cold water source connector;
(b) a hot water feed connector;
(c) a collector supply connector;
(d) a collector return connector;
(e) a cold water inlet connector;
(f) a bifurcated hot water outlet connector having a collector return channel and a hot water feed channel;
(g) cold water line means connecting said cold water source connector to said cold water inlet connector;
(h) collector supply line means connecting said collector supply connector to said cold water lines means;
(i) hot water line means connecting said hot water feed channel of said bifurcated hot water outlet connector to said hot water feed connector;
(j) collector line means connecting said collector return channel of said bifurcated hot water outlet connector to said collector return connector;
(k) means for circulating water connected within said collector supply line means;
(l) means for controlling said circulating means electrically connected to said circulating means; and
(m) whereby said cold water source connector may be connected to a cold water source line of said facility plumbing; said hot water feed connector may be connected to a hot water feed line of said facility plumbing; said collector supply connector may be connected to a supply of said solar collecting devise; said collector return connector may be connected to a return line from said solar collecting device; said cold water inlet connector may be connected to a cold water inlet of said water reservoir; and said bifurcated hot water connector may be connected to a hot water outlet of said water reservoir.

4,210,126
SOLAR ENERGY COLLECTOR

Howard E. Kellberg, and Arthur H. Wilder, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,896
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—443 10 Claims



1. A solar energy collector structure comprising:

a plurality of partially evacuated tubular members substantially transparent to incident solar radiation, said tubular members having opposed lateral ends being arranged in a first and second group and lying adjacent one another in parallel axial alignment, means for joining each tubular member next to each adjacent tubular member of the group to form a first and second respective tube sheet structure;

said tube sheets arranged adjacent each other in tandem to form at least one flow channel therebetween in a self-supporting structure;

an absorber member disposed within said flow channel for intercepting and absorbing solar energy; and

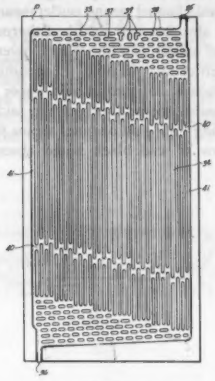
an insulating film having deposited thereon a radiation reflecting substance located behind said absorber member disposed over and conforming closely to a surface of said second tube sheet for forming an insulating space between the insulating film and the second tube sheet to thereby suppress radiation, conduction and convection from said absorber in a direction out of the interior of the flow channel.

4,210,127
HEAT EXCHANGER PANEL HAVING REFERENCE INDICIA AND IMPROVED FLOW DISTRIBUTION

Charles A. Kleine, Florissant, Mo., and Verne L. Middleton, East Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 22, 1978, Ser. No. 917,815
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—444 12 Claims

1. In a heat exchanger panel for use in a solar energy collector system, said panel comprising a plurality of spaced parallel individual tubular passageways connecting opposed headers defined by numerous island-like bonded portions connected by a plurality of tubular channels passing therebetween, the boundaries of said headers defining a generally triangular shape with at least one of said boundaries being inclined with respect to an edge of said panel, said headers including entry and exit portions to said panel, said entry and exit portions being laterally displaced from the center of said panel to permit a heat exchange medium to flow into said panel and across said headers so that said medium flows through each of the plurality of spaced parallel individual tubular passageways connecting said headers; and said parallel individual tubular passageways being interconnected by further tubular interconnecting portions spaced from said headers the improvement wherein

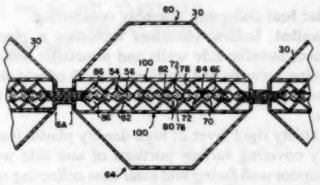


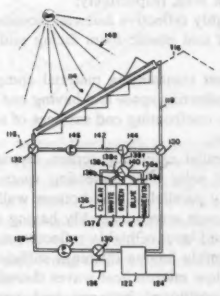
said tubular interconnecting portions are arranged across said panel at an inclination generally corresponding to the inclination of said at least one boundary.

4,210,128
BLACK LIQUID ABSORBING SOLAR COLLECTOR

John P. Mattson, Duxbury, Mass., assignor to Solarspan, Inc., Duxbury, Mass.

Continuation-in-part of Ser. No. 914,388, Jun. 12, 1978. This application Aug. 30, 1978, Ser. No. 938,026
Int. Cl.[2] F24J 3/02; F28F 7/00
U.S. Cl. 126—444 10 Claims





10. A solar to thermal energy converter for use in solar energy collector systems comprising an upper and lower surfaces transparent to solar energy and defining a plurality of elongate channel means therebetween for exposing a solar energy absorber heat transfer fluid to solar radiation, a solar energy absorber heat transfer fluid comprising a black liquid absorber for converting solar energy to thermal energy and

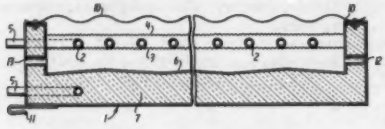
absorbing said thermal energy upon exposure to solar radiation, inlet means for introducing said black liquid absorber to said channel means, means for passing said black liquid absorber through said channel means, outlet means for conveying said black liquid absorber and absorbed thermal energy away from said channel means, said upper and lower channel means surface being sufficiently flexible to accommodate thermal expansion, and means disposed in said upper and lower surfaces defining conduit means transverse to said channel means and communicating with said channel means for adjusting the pressure and flow of said black liquid absorber along said channel means.

4,210,129

SOLAR HEAT COLLECTOR

Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845

Filed May 30, 1978, Ser. No. 911,051
Int. Cl.[2] F24J *3/02;* **F28F** *13/00*
U.S. Cl. 126—447 **11 Claims**



1. A solar heat collecting assembly comprising:

a thin-walled, hollow container including a plurality of attached, metallic side walls and a metallic bottom wall extending between end portions of each of said side walls for partially defining a solar heat collecting space therebetween;

a substantially rigid layer of high density plastic foam completely covering surface portions of said side walls and said bottom wall facing said solar heat collecting space for preventing the transfer of heat through said side walls and said bottom wall, respectively;

a layer of highly reflective material mounted on all surface portions of said plastic foam facing said heat collecting space;

a sheet of heat transmitting material completely covering said heat collecting space and having end portions fixedly attached to confronting end surfaces of said high density plastic foam;

a pair of parallel extending screen assemblies positioned within said solar heat collecting space and extending substantially parallel to said bottom wall of said hollow container, each screen assembly having end portions attached to said layer of highly reflective material and each screen assembly having openings sufficient to allow the passage of low micron heat waves therethrough;

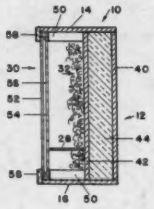
tube means positioned between said parallel extending screen assemblies, with said tube means having opposite end portions each extending through a separate opening in a wall of said hollow container for providing a liquid flow passageway through said heat collecting space and between said screen assemblies, whereby heat captured by said tube means and said screen assemblies is transferred to the liquid flowing through said tube means.

4,210,130

SOLAR COLLECTOR WITH MULTI-TURN COLLECTING STRIPS

Nancy K. Boodley, Townline-Iradell Rd., and Frank Hanshaw, Spruce La., both of Ithaca, N.Y. 14850

Continuation of Ser. No. 760,230, Jan. 17, 1977, abandoned. This application Jan. 20, 1978, Ser. No. 871,064
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—449 **3 Claims**



1. A solar collector for collecting energy from the sun and transferring the energy to a transfer fluid, said solar collector comprising:

a collecting box, said box having inlet and outlet means for said transfer fluid and including an insulated bottom, side walls extending upwardly from said bottom, and a light transmissive cover, said bottom, sides and cover defining an air tight space, inner surfaces of said bottom and side walls being collecting surfaces;

a plurality of multi-turn helical collecting strips secured to said inner surface of said bottom of said collecting box, each of said helical collecting strips having a strip width of between about ¼ and ¾ inch and a strip length of between about 2 and 12 inches and forming an infinite number of parabolic surfaces, each of said parabolic surfaces absorbing a portion of the rays from the sun striking it, rays reflected from said parabolic surfaces being collected and concentrated at the focal length of said parabolic surfaces to form areas of elevated temperature; and

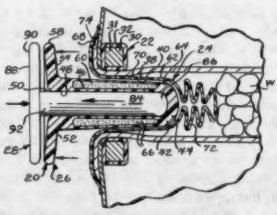
means for causing flow of said transfer fluid through said collecting box whereby heat collected in said box by said inner surfaces of said walls and bottom, said multi-turn collecting strips, and concentrated at the focal length of said parabolic surfaces is transferred to said transfer fluid and is removed from said solar collector.

4,210,131

ARTIFICIAL SPHINCTER WITH COLLECTION BAG

Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 26, 1978, Ser. No. 928,043
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R **9 Claims**



1. An artificial sphincter for closure of a channel in a pa-

tient's body communicating with an opening adjacent the outside of the patient's body, comprising:

a generally annular member containing a first material for placement at least partially around the channel of the patient's body;

a plug having an elongated outer wall of an elastic material for placement within said annular member in the body channel with the plug outer wall facing the walls of said channel in a closure position of the plug, said plug containing a particulate second material positioned in a region within the annular member when said plug is located in said closure position, with at least one of said first and second materials comprising a permanent magnetic material, and with the other of said first and second materials comprising a material substantially susceptible to said one magnetic material; and

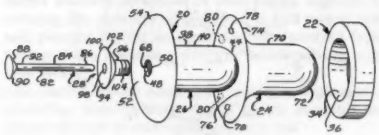
a collection bag of flexible material having a first surface, a second opposed surface, a proximal portion extending peripherally around said opening, means for releasably attaching the first surface of proximal portion to the patient's body peripherally around said opening, an elongated annular central portion for covering said outer plug wall in said closure position with the first surface of the central portion facing outwardly toward said body channel, and with the second surface of the central portion facing toward the plug outer wall, and said bag having a distal portion extending distally from said central portion in the body channel, with said distal bag portion being folded into a configuration of reduced dimensions, said bag being capable of assuming an inverted configuration when the plug is removed from the body channel with the central and distal bag portions located outside the patient's body, with said distal bag portion being expanded to a configuration of enlarged dimensions, and with the first surface of the inverted bag defining a cavity to receive materials passing from the body channel.

4,210,132

ARTIFICIAL SPHINCTER

Alfred R. Perlin, Highland Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jul. 26, 1978, Ser. No. 928,203
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R **36 Claims**



1. An artificial sphincter for closure of a channel in a patient's body communicating with an opening adjacent the outside of the patient's body, comprising:

a generally annular member containing a first material for placement at least partially around the channel of the patient's body;

a plug having elongated flexible sidewalls of an elastic material for placement within said annular member in the body channel with the plug sidewalls flexing toward walls of said channel in a closure position of the plug, said plug containing a particulate second material positioned in a region within the annular member when said plug is located in said closure position, at least one of said first and second materials comprising a permanent magnetic material, and the other of said first and second materials comprising a material substantially susceptible to said one magnetic material; and

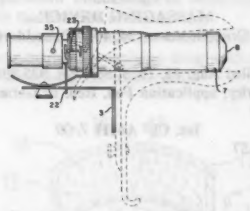
applicator means for selectively placing said plug in said closure position and for selectively removing the plug from the body channel comprising means for modifying the transverse dimensions of the plug sidewalls relative to the body channel.

4,210,133

VAGINAL MICROSCOPE

Jimeno O. Castaneda, Colonia Lindavista, Mexico, assignor to Consejo Nacional de Ciencia y Tecnologia, Mexico, Mexico

Filed Oct. 20, 1976, Ser. No. 734,098
Claims priority, application Mexico, Oct. 21, 1975, 89285
Int. Cl.[2] A61B *1/00, 1/06, 1/30*
U.S. Cl. 128—6 **15 Claims**



1. An instrument for microscopic examination through the vagina comprising:

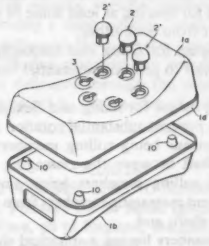
guide-tube means including means for attaching said guide-tube within a speculum and microscope means adjustably positioned inside said guide-tube means.

4,210,134

PILLOW FOR MANUAL THERAPEUTICS

Yasukichi Okazaki, and Tatsuo Okazaki, both of Kamifukuoka, Japan, assignors to Kabushikigaisha OMCO, Saitama, Japan

Filed Aug. 10, 1978, Ser. No. 932,485
Claims priority, application Japan, Mar. 30, 1978, 53-29859[U]; Jul. 12, 1978, 53-95799[U]
Int. Cl.[2] A61H *29/00*
U.S. Cl. 128—24.1 **21 Claims**



1. A pillow for manual therapeutics comprising:

a hollow body (1) including an upper body member (1*a*) having a surface portion for receiving and supporting at least a part of a human body, and a lower body member (1*b*) connected to said upper body member (1*a*);

at least one protrusion (2) detachably mounted on said receiving and supporting surface portion of said upper body member (1*a*);

said upper body member comprising at least one aperture, said at least one aperture being equal in number to the number of said at least one detachable protrusion, said at least one detachable protrusion (2) comprising a head portion (2*a*) and a leg portion (2*b*) connected to said head portion, said leg portion being introducable into said at least one aperture; and

said at least one aperture further comprising a guide slit (3*a*)

and said detachable protrusion (2) further comprising a lock protrusion (2c) extending from said leg portion (2b) of said at least one protrusion (2), said lock protrusion being passable through said guide slit when in alignment therewith, such that said detachable protrusion (2) is detachable from said hollow body (1) only when said lock protrusion (2c) is aligned with said guide slit (3a);

whereby when a human head or body part is supported on said hollow body, said at least one protrusion exerts pressure on at least a portion of the supported part of said head or body.

4,210,135

MASSAGING DEVICE

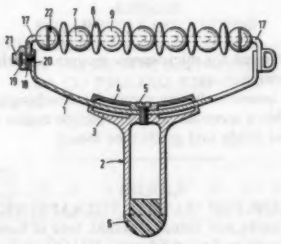
Erich Deuser, Grupellostrasse 24, 4000 Dusseldorf, Fed. Rep. of Germany

Filed Aug. 22, 1978, Ser. No. 935,896

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1977, 2738060

Int. Cl.[2] A61H *7/00*

U.S. Cl. 128—57 **25 Claims**



1. A massaging device comprising:

(a) a flexible shaft;

(b) bow means for holding the ends of said flexible shaft;

(c) a handle attached to said bow means;

(d) a plurality of massaging members on said flexible shaft;

(e) spacer means for spacing at least some of said massaging members apart from each other;

(f) first fixing means for fixing said massaging members to said flexible shaft to prevent substantial rotation therebetween;

(g) second fixing means for fixing said flexible shaft to said bow means to prevent substantial rotation therebetween;

(h) said spacer means being rolling members arranged on said flexible shaft between the massaging members, the radius of said rolling members being smaller than the radius of adjacent massaging members from the center line of the flexible shaft; and

(i) said rolling members having a spherical shape.

4,210,136

APPARATUS FOR AUTOMATIC VENTILATION OF THE LUNGS

Wayne R. Apple, P.O. Box 3370, Boulder, Colo. 80303

Division of Ser. No. 815,659, Jul. 14, 1977, Pat. No. 4,141,355. This application Sep. 25, 1978, Ser. No. 945,644

Int. Cl.[2] A62B *7/00;* **A61M** *15/00*

U.S. Cl. 128—204.21 **4 Claims**

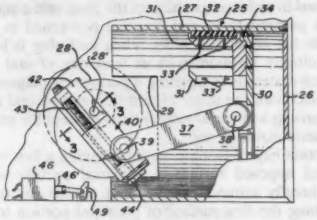
1. In a respiratory machine of the variable stroke, piston type having a piston reciprocable in a cylinder and a variable length connecting rod between the piston and the shaft of a motor, the improvement of

(a) said variable length connecting rod including an elongated housing means mounted with its longitudinal axis perpendicular to the axis of the motor shaft and mounted axially and laterally off-center, thereof,

(b) jack screw means rotatably mounted in said housing,

(c) bar means threadedly mounted on said jack screw and arranged to be moved generally from end to end of said jack screw,

(d) connecting pin means mounted on and depending from said bar interconnecting said bar means and the connecting rod,



(e) axial extending means operably connected to said jack screw means extending beyond said housing means for turning said jack screw means, and

(f) turning means inclusive of individually activated contact means positioned to contact said extending means for a short arc of each revolution of said housing means to turn said jack screw means in one direction a portion of a revolution to change the position of said bar means in said housing means.

4,210,137

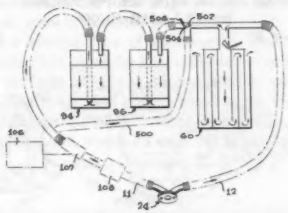
ALTITUDE CONDITIONING METHOD AND APPARATUS

Melvyn L. Henkin, 5011 Donna Ave., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 646,424, Jan. 5, 1976, Pat. No. 4,086,923. This application May 1, 1978, Ser. No. 901,621

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—200.24 **17 Claims**



1. Apparatus for supplying air, for inspiration by a user, having a lower oxygen concentration than the ambient air, said apparatus comprising:

inspiratory path means having open first and second ends and including means therein for permitting air flow only in the direction from said second to said first end;

expiratory path means having open first and second ends and including means therein for permitting air flow only in the direction from said first to said second end;

air reservoir means;

means coupling said expiratory path means second end to said reservoir means for supplying air thereto;

means coupling said inspiratory path means second end to said ambient air and said reservoir means for drawing air therefrom comprising a selected ratio of ambient air and air from said reservoir means; and

means for removing CO_2 from air flowing between said expiratory path means first end and said inspiratory path means first end, said CO_2 removing means including ad-

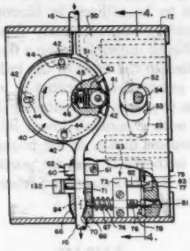
justable means for selectively varying the amount of CO_2 removed.

4,210,138

METERING APPARATUS FOR A FLUID INFUSION SYSTEM WITH FLOW CONTROL STATION

Thurman S. Jess, Mundelein, and Nicholas Zissimopoulos, Schaumburg, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1977, Ser. No. 856,926
Int. Cl.² A61M 5/00
U.S. Cl. 128—214 E **6 Claims**



1. Fluid metering apparatus for controlling the flow of fluid through the tubing of a fluid administration set, comprising:

a housing;

a rotor mounted on said housing for rotation about a fixed axis, said rotor including a plurality of pressure rollers disposed about the circumference thereof;

a platen assembly slidably mounted to said housing and having a pressure plate having an open position displaced from the circumference of said rotor whereby said tubing can be inserted therebetween, and having a closed position adjacent said rotor circumference whereby a segment of said tubing is positioned in compressive engagement with said pressure rollers and fluid is caused to flow along the tubing with rotation of said rotor;

flow restriction means including a plunger slidably mounted on said housing for occluding said tubing at a predetermined location downline of said tubing segment for increasing the pressure of said fluid in said tubing segment, said plunger having an open position removed from said tubing and a operating position compressively engaging said tubing;

means carried on said housing for biasing said plunger to said operating position even if said platen assembly is accidently moved to said open position; and

user-actuable latching means operable only when said platen assembly is in said open position for latching said plunger in said open position, said latching means automatically releasing said plunger to allow said plunger to move to said operating position upon actuation of said pressure plate to said closed position.

4,210,139

OSMOTIC DEVICE WITH COMPARTMENT FOR GOVERNING CONCENTRATION OF AGENT DISPENSED FROM DEVICE

Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation, Palo Alto, Calif.

Filed Jan. 17, 1979, Ser. No. 4,180
Int. Cl.² A61M 7/00
U.S. Cl. 128—260 **6 Claims**

1. An osmotic device for the controlled delivery of a beneficial drug to a biological environment of use, comprising:

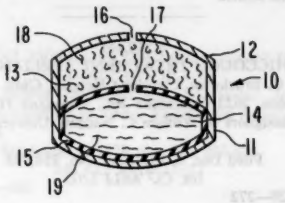
(a) an exterior wall formed of a semipermeable material permeable to the passage of an external fluid present in the environment and substantially impermeable to the passage of drugs and osmotically effective solutes, the exterior wall surrounding and forming;

(b) a first compartment containing an osmotically effective solute that exhibits an osmotic pressure gradient across the wall against the exterior fluid;

(c) a second compartment surrounded by an interior wall formed of a semipermeable material permeable to the passage of external fluid at a lower rate than through the exterior wall and substantially impermeable to the passage of drugs and osmotically effective solute, said compartment containing a drug;

(d) a passageway in the exterior wall communicating the first compartment containing the osmotically effective solute with the exterior of the device;

(e) a passageway in the interior wall communicating the second compartment containing drug with the first compartment containing the solute; and,



(f) wherein, in operation when the device is in the fluid environment of use, fluid from the environment is imbibed through the wall into the first compartment and through the walls into the second compartment and (1) into the first compartment containing the solute in a tendency towards osmotic equilibrium at a rate determined by the permeability of the exterior wall and the osmotic pressure gradient across the wall thereby forming a solute solution, and into (2) the second compartment containing drug in a tendency towards osmotic equilibrium at a rate determined by the permeability of the interior and exterior walls and the osmotic pressure gradient across the wall thereby forming a drug solution, with drug solution osmotically delivered through the passageway from the second to the first compartment and diluted therein and osmotically delivered through the passageway from the first compartment to the exterior of the device.

4,210,140

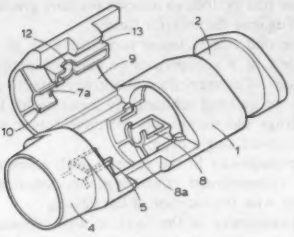
DEVICE FOR DISPENSING MEDICAMENTS

Michael James, Pirton; Paul K. Rand, Hitchin, and Gerald W. Hallworth, Ware, all of England, assignors to Allen & Hanburys Limited, London, England

Filed Feb. 7, 1978, Ser. No. 875,884
Claims priority, application United Kingdom, Feb. 10, 1977, 5486/77; Feb. 10, 1977, 5489/77; Apr. 29, 1977, 18058/77
Int. Cl.² A61M 15/00
U.S. Cl. 128—266 **12 Claims**

1. An inhaler device for administering medicaments contained in capsules of the kind including a capsule body portion fitted with a capsule cap portion, the said device comprising a body shell provided with an internal chamber, at least one air inlet opening leading into the chamber, an outlet nozzle through which air can be aspirated from the chamber, a capsule receptacle mounted entirely inside the chamber, the said receptacle including means for retaining one of said portions of a capsule therein, and capsule opening means arranged to engage the other said portion of the capsule retained in the capsule receptacle, the receptacle and the opening means being movable with respect to one another to separate the two said

capsule portions from each other whereby powdered medicament can exit from the said capsule portions and be entrained



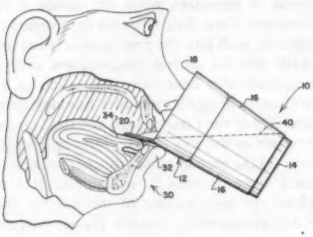
in air flowing through the chamber when air is aspirated through the nozzle.

4,210,141

HICCOUGH TREATMENT APPLIANCE

Raymond G. Brockman, Cleveland Heights, Ohio, and William C. Nadeau, 2623 Queenston Rd., Cleveland Heights, Ohio 44118, assignors to William C. Nadeau, University Heights, Ohio

Filed Dec. 8, 1977, Ser. No. 858,793
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272 **6 Claims**



1. A hiccough treatment appliance, comprising:

(a) structure defining an upwardly opening container having a bottom portion configured to be supported atop a flat horizontal surface and a rim portion extending perimetrically about the top of the container when the bottom portion is supported atop a flat horizontal surface;

(b) a relatively flat, thin, tab-like projection means extending predominantly upwardly when the appliance is positioned with the bottom portion supported atop a flat horizontal surface:

(i) for insertion a short distance into the mouth of a person in overlying relationship with the frontal tip portion of the person's tongue as the rim portion is brought toward a position of engagement with the person's lower lip;

(ii) for engaging in overlying relationship the frontal tip portion of the person's tongue as the rim portion is brought into firm seating engagement with the person's lower lip;

(iii) for firmly depressing the frontal tip portion of the person's tongue as the appliance is tipped while in seating engagement with the person's lower lip to dispense liquid from the container into the forward part of the person's mouth; and

(iv) for continuing to depress the frontal tip portion of the person's tongue and to thereby restrain tongue movement as such liquid is swallowed;

(c) the structure and the projection means being formed as a single, one piece, integral member;

(d) the tab-like projection means consisting of a tab-like structure which extends upwardly from a part of the perimetrically extending rim, the tab-like structure having a width, as measured along the rim part, which is relatively narrow in comparison with the perimeter of the rim, the tab-like structure being relatively short in length to effect engagement and depression of only the frontal tip portion of the person's tongue when the appliance is tipped to dispense liquid into the person's mouth;

(e) the tab-like structure extending upwardly from the rim at an angle of inclination relative to the plane of an adjacent side wall part, the angle of inclination being within the range of about two to twenty-five degrees;

(f) the container side wall being provided with indicia means for indicating an appropriate level of liquid in the container means to be utilized in hiccough treatment, the container holding approximately four to six ounces of liquid when being supported atop a flat horizontal surface and being filled to the level of the indicia means; and

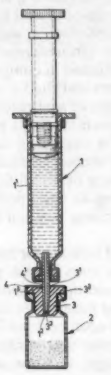
(g) the indicia means being located at a sufficient distance below the rim to permit the container to be tipped while in engagement with a person's lower lip and to permit the tongue depression means to be brought into overlying engagement with the frontal tip portion of the person's tongue before liquid is dispensed from the container into the person's mouth.

4,210,142

TWIN CHAMBER INJECTION SYRINGE

Hans Wörder, 27, Lange Wand, D-4980 Bünde 1, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,340
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 7732670
Int. Cl.[2] A61J *1/00*
U.S. Cl. 128—272.1 **10 Claims**



1. In a twin-chamber syringe for medical purposes, having a cylindrical syringe body with a conical shoulder on the front end, a peripheral rotating locking ring for firmly mounting a sealing cap or subsequently a tubule, a piston that can be displaced by means of a plunger and that seals the syringe body at the rear, and a separate container to be connected to the syringe, as the second chamber, and which has a sealing cap with a flanged cap incorporated in it, the improvement that said container serving as the second chamber, and which contains the mixing component, has an elastic locking cap with a centrically arranged weak point in the form of a diaphragm, and that said flanged cap sealing the locking cap on the outside, is provided with a centering device covering the same area as the weak point of the locking cap and receiving the conical shoulder, so that when container is fitted the centering device of the flanged cap and the peripheral locking ring of the conical

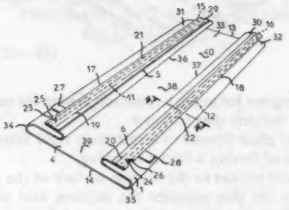
shoulder snap into each other so that they can be subsequently detached.

4,210,143

DISPOSABLE NAPPY FOR A BABY

Raphaël De Jonckheere, Bondues, France, assignor to Societe Anonyme dite: Consortium General Textile, Nord, France

Filed Jul. 26, 1978, Ser. No. 927,977
Claims priority, application France, May 8, 1978, 78 14350
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **5 Claims**



1. A disposable nappy for a baby, comprising a sheet of flexible impermeable material having two longitudinal side edges intended to define opening for the legs of a baby and two transverse end edges intended to define a waist portion, an absorbent pad superimposed on a central region of said impermeable sheet with longitudinal side edges of said pad spaced inwardly from longitudinal side edges of said impermeable sheet, the longitudinal side edges of said impermeable sheet being folded inwardly on themselves and secured to said impermeable sheet along longitudinal junction lines at a distance from the folds to form longitudinally extending tubular sheaths at opposite sides of said nappy, said pad being disposed only on a central region of said impermeable sheet between said longitudinal junction lines, a flexible longitudinal tie located inside each of said sheaths and able to slide therein, said nappy being folded over on itself along longitudinal lines to form a central portion, opposite side portions extending inwardly from first fold lines toward a longitudinal center line of said nappy, and opposite edge portions extending outwardly from second fold lines, said edge portions comprising said sheaths, and means providing access to at least one end of each of said longitudinal ties in order to make it possible to grip the latter manually and tension them to reduce the effective length of said sheaths and thereby press the latter around the baby's legs to give the nappy the shape of a trough between said sheaths.

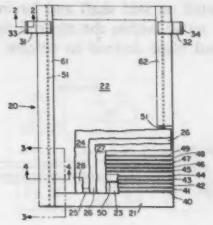
4,210,144

DISPOSABLE DIAPER HAVING REFASTENABLE TAPE SYSTEM

Henry D. Sarge III, Okeana, and Alan R. Spector, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 18, 1978, Ser. No. 943,595
Int. Cl.[2] A61F *13/16*
U.S. Cl. 128—287 **19 Claims**

1. In an improved disposable diaper of the type having an absorbent pad assembly secured to a substantially moisture impervious backsheet of relatively thin material having a relatively high elongation to tensile force property, and having peelable adhesive co ted tape-tab fasteners wherein at least one of said tape-tab fasteners has a nonadhesive coated distal end portion to provide a mother's grasping portion for facilitating removal of said diaper from a user, the improvement comprising a coating disposed on an inwardly facing surface of a mother's bond region of said backsheet, said coating comprising a self-adhering coating material having a relatively high



tensile strength and a low elongation to tensile force property relative to said backsheet.

4,210,145

SURGICAL HOLE CUTTER FOR SQUARE HAIR TRANSPLANT PLUGS

Jack Nestor, Miami Beach, and John W. Devine, Jr., Miami, both of Fla., assignors to Nestor Engineering Associates, Inc., Miami, Fla.

Filed Apr. 5, 1978, Ser. No. 893,626
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 **9 Claims**

1. An instrument for cutting a hole in the scalp for receiving a hair transplant donor plug of square surface area comprising a handle having a longitudinal axis, said handle terminating at one end in a coaxially mounted square knife having four identical sides, each side being formed with a bottom edge sharpened for cutting and inclined inwardly from a point located at one corner of the square to a cutback at the adjacent corner of the square, each point having an adjacent edge extending parallel to said longitudinal axis sharpened for cutting and extending inwardly along a corner of the square and being exposed by said cutback, the interior of the square knife being recessed a predetermined distance inwardly of said points and of said cutbacks as a depth of cut limiting means, said inclined sharpened edges cutting a square incision on axial pressure of said handle to said depth of cut and said sharpened adjacent edges cutting a circular incision at the bottom of said square incision upon rotation of said handle.

4,210,146

SURGICAL INSTRUMENT WITH FLEXIBLE BLADE

Anton Banko, 1496 Mayflower Ave., Bronx, N.Y. 10461

Filed Jun. 1, 1978, Ser. No. 911,677
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—305 **9 Claims**

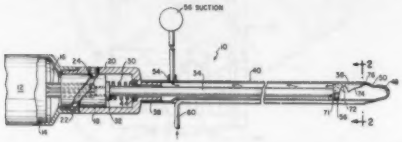
1. A surgical instrument comprising:

a hollow tubular member having a tip portion which tapers to a smaller diameter than the major part of the member, said tapered tip having an opening formed therein,

a shaft within said tubular member,

means for reciprocating said shaft toward and away from said tapered tip of said tubular member,

a blade mounted on said shaft and having a first portion adapted to move within the tapered tip of said tubular member, said blade formed to deform by engaging the



tubular member and to conform to the tapered shape of the tip as the blade is moved further into said tip so that the blade makes a shearing cut of material in the tip opening in cooperation with the wall of the tubular member surrounding the opening as the blade sweeps across the opening.

4,210,147

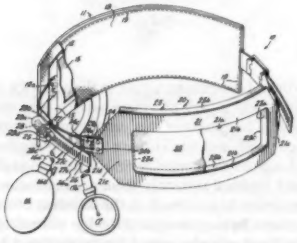
HEAD TOURNIQUET HAVING INCISION CLOSING CAPABILITY

Jack Nestor, 1496 Mayflower Ave., 10461, and John W. Devine, Jr., both of Miami, Fla., assignors to Nestor Engineering Associates, Inc., Miami, Fla.

Filed Jun. 19, 1978, Ser. No. 917,089

Int. Cl.[2] A61B *17/12*

U.S. Cl. 128—327 **7 Claims**



1. A tourniquet for controlling hemostasis in a predetermined area of the scalp formed as a head encircling band comprising two flexible non-fabric plate members, each having a firmness for maintaining a predetermined substantially configuration, said plate members being arranged opposite each other and interconnected at opposite ends thereof by a pair of circumference size-adjusting means, a first of said plate members forming a backing and support for an air bladder having an air pressure gauge and valved, hand operated air pump bulb, the second of said plate members being formed as a frame having a large center opening, and a firm flexible and resilient rubber pad liner having a center opening conforming to said frame center opening, said liner being attached to the interior side of said frame with said frame and liner openings in register to provide a window exposing said predetermined scalp area, said plate member flexibility and firmness enabling said frame and liner to conform to the contour of the head for applying a substantially uniform hemostatic pressure to the periphery of said scalp area by pressure exerted by said air bladder.

4,210,148

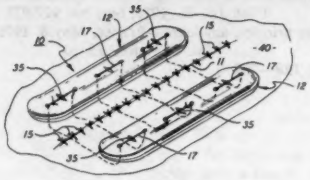
RETENTION SUTURE SYSTEM

Oscar G. Stivala, 10 Whited St., Little Falls, N.Y. 13365

Filed Nov. 3, 1978, Ser. No. 954,221

Int. Cl.[2] A61B *17/04*

U.S. Cl. 128—335 **5 Claims**



1. A retaining bar for use in a retention system for safeguarding a surgical incision that includes

an elongated plate formed of a relatively rigid material that is capable of flexing without breaking,

a pad securely affixed to the bottom surface of the plate for contacting the skin adjacent the incision, said pad being formed of a resilient open-celled material that is capable of conforming to the contour of the skin while, at the same time, permitting air to contact the skin,

said cojoined plate and pad having at least one suture hole pair passing downwardly therethrough with the holes being located upon the longitudinal axis of the plate and being spaced apart at a distance substantially equal to the width of said plate, and

said plate further including laterally extended notches recessed into the top surface thereof that span the lateral axis of the plate midway between each of the holes in the hole pair, and the entire lower edge of the plate containing a gently rolled corner to prevent damaging the skin as the bar is drawn thereagainst.

4,210,149

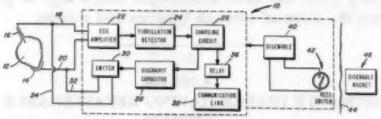
IMPLANTABLE CARDIOVERTER WITH PATIENT COMMUNICATION

Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, both of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Apr. 17, 1978, Ser. No. 896,518

Int. Cl.[2] A61N *1/36*

U.S. Cl. 128—419 D **19 Claims**



1. A patient communication system for use in a cardioverter encased in a housing implanted in a patient, the cardioverter including a detector for detecting the onset of fibrillation, a discharge device operative at the expiration of a first time interval subsequent to the detection of said fibrillation for discharging defibrillating energy in the form of a defibrillating shock through the heart of the patient, and a charging device made active subsequent to the detection of said fibrillation for charging the discharge device with sufficient energy to effect defibrillation, said patient communication system comprising:

implanted communication means for issuing a communication signal capable of detection by the patient, said communication means including a pair of implanted electrodes arranged to deliver a mild shock to the patient, at least one of said electrodes being disposed on an exterior surface of

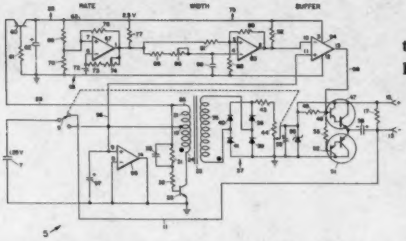
said implanted housing; and implanted triggering means for actuating said communication means in response to a given condition of the implanted cardioverter.

4,210,150

MINIATURIZED TRANSCUTANEOUS NERVE STIMULATING DEVICE

Donald N. James, Estes Park, Colo., assignor to Staodynamics, Inc., Longmont, Colo.

Filed Jun. 27, 1977, Ser. No. 810,126
Int. Cl.[2] A61N 1/36
U.S. Cl. 128—421 **7 Claims**



1. In a transcutaneous nerve stimulating device having electrodes for applying electrical energy to a subject, an electrical unit comprising:

switching means;

pulse producing means for generating pulses having predetermined widths and at a predetermined rate, said pulse producing means being connected with said switching means for coupling said generated pulses thereto;

rectifier means connected with said switching means;

a very low voltage source of below two volts;

electrical power means including a step-up transformer the primary winding of which is connected with said very low voltage source and directly connected with said pulse producing means to supply power thereto, and the secondary winding of which is connected with said rectifier means; and

output terminals connected with said switching means and through which pulses may be coupled to the electrodes of said device for application to a subject.

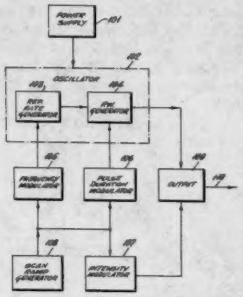
4,210,151

ELECTRONIC PAIN CONTROL WITH SCANNED OUTPUT PARAMETERS

John W. Keller, Jr., Miami, Fla., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Sep. 26, 1978, Ser. No. 945,974
Int. Cl.[2] A61N 1/36
U.S. Cl. 128—421 **9 Claims**

1. A transcutaneous electrical nerve stimulator for pain control comprising: means for generating a pulse signal; respective means for continuous, automatic variation, through respective predetermined ranges, of the pulse signal parameters of output pulse width, and output pulse amplitude; and means, responsive to said respective means, for intermittently producing, for a given set of nerves, an output stimulation signal employing a signal amplitude—pulse width combination, and duration of that combination, which is adequate to produce requisite pain control effect.

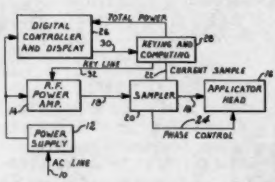


4,210,152

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE OUTPUT POWER OF A SHORTWAVE THERAPY APPARATUS

Fred M. Berry, Johnson County, Kans., assignor to International Medical Electronics Ltd., Kansas City, Mo.

Filed May 1, 1978, Ser. No. 901,854
Int. Cl.[2] A61N 1/40
U.S. Cl. 128—422 **36 Claims**



1. A method for controlling the amount of power being absorbed by a load within the irradiating region of an applicator head of a shortwave diathermy apparatus, said method comprising the steps of

selecting a power setting,

periodically establishing a duty cycle of variable duration,

generating a radio frequency electric signal during said duty cycle said radio frequency electric signal having a current component and a voltage component,

providing said radio frequency electric signal to said applicator head to thereby produce electrostatic and electromagnetic energy in said applicator head,

applying said electrostatic and electromagnetic energy to said load by means of said applicator head,

ascertaining the level of power being absorbed by said load during the duty cycle to obtain a first power measurement,

deriving from said first power measurement and the duration of the duty cycle a power figure representative of the amount of power being absorbed by said load,

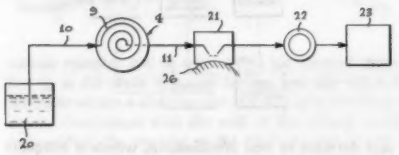
comparing said power figure with said power setting, and

varying the duration of the duty cycle so as to reduce the difference between said power setting and said power figure.

4,210,153
MEDICAL DIAGNOSTIC DEVICE FOR DETERMINING BLEEDING TIMES AND BEHAVIOR OF BLEEDINGS FROM A STANDARDIZED WOUND

Robert Fehlau; Peter Schlussel, and Matthias Schneider, all of Freiburg, Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,261
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1978, 2808473
Int. Cl.² A61B 5/00
U.S. Cl. 128—637 10 Claims



1. A medical diagnostic device for determining bleeding times and behavior of bleedings from a standardized wound, comprising

means for establishing a flow of a rinsing liquid past the wound thereby to contact the wound;

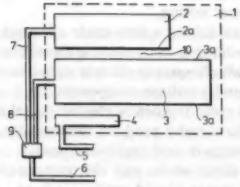
means for determining a characteristic of the rinsing liquid which is representative of the blood contents in the rinsing liquid having contacted the wound; and

means for controlling the temperature of the rinsing liquid; wherein the temperature control means comprise a first heat exchanger for receiving the flow of the rinsing liquid therethrough, a second heat exchanger for receiving the flow of a second, auxiliary liquid therethrough, a temperature control element in thermal contact with the first and second heat exchangers, and means for controlling energization of the Peltier element as a function of the temperature of the rinsing liquid.

4,210,154
SLEEVE WITH ARMBAND

Johann Klein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 6, 1977, Ser. No. 857,963
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657519
Int. Cl.² A61B 5/02
U.S. Cl. 128—685 4 Claims



1. A sleeve with an armband for measuring blood pressure of the type which is wound and fixed round a part of the patient's body during use, the sleeve comprising a first inflatable longitudinal pressure chamber windable along its longitudinal axis about body parts having a first range of circumferential extent, a separate second inflatable longitudinal pressure chamber having a substantially greater length than the first windable along its longitudinal axis about body parts having a second range of circumferential extent different from the first, wherein the two chambers extend longitudinally superposed one upon the other, and pneumatic swtich-over means for swtiching a supply of compressed air alternatively to the first chamber when a body part having a circumferential extent in the first range is to be wound around or the second chamber when a body part having a circumferential extent in the second range is to be wound around to effect the inflation of only one of the two chambers while maintaining the other chamber in the deflated state.

4,210,155
INSPIRATIONAL INHALATION SPIROMETER APPARATUS

Jerry Grimes, 1798 N. Garey Ave., Pomona, Calif. 91767

Filed Aug. 3, 1978, Ser. No. 930,553
Int. Cl.² A61M 16/00
U.S. Cl. 128—727 5 Claims

1. A disposable inhalation spirometer apparatus for prophylactic respiratory maneuver and intended for single patient use, said spirometer apparatus comprising:

(a) a tube member having an interior respiratory passage and opposite end portions, one of said end portions having means for breathing use by a patient;

(b) an enlarged, enclosed mist accumulation chamber of substantially greater cross-sectional diameter than said tube member and of a size to contain a volume of air on the order of an entire inhalation by the patient and having a rigid wall and inlet means and an outlet means connected closely adjacent to said tube member interior passage intermediate said opposite end portions;

(c) a bleed port extended through said wall and open to the atmosphere exterior of said accumulation chamber;

(d) a medicant mist dispensing nebulizer having outlet means connected to said accumulation chamber inlet means whereby an entire inhalation of air and medicant is collected in said accumulation chamber and having a nebulizer inlet means communicating with a pressurized gas supply source for introducing a flow of pressurized gas in said spirometer apparatus;

(e) check valve means positioned between said chamber and said tube member and operative to close automatically upon expiration and open upon inhalation;

(f) a visual meter indicating relative inhalational ability and including a tube having a transparent portion and defining a meter chamber connected to and extended upwardly from said tube member and positioned closer to the other end portion of said tube member relative to said accumulation chamber, said meter chamber having a substantially closed bottom and a top communicating with a passage to said tube member and directing respiratory pressure differentials thereto;

(g) a piston responsive to said respiratory pressure differentials slidably mounted in said meter chamber and moving

upwardly therein upon inhalation and moving downwardly therein upon exhalation by said patient; and

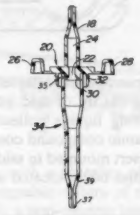
(h) check valve means at the other end portion of said tube member and operative to close automatically upon inhalation and open upon exhalation, said visual meter positioned between said check valve means at the other end portion and said accumulation chamber outlet means.

4,210,156

FINGER STICK BLOOD COLLECTION APPARATUS

Elmer T. Bennett, 2018 Dickinson St., Philadelphia, Pa. 19046

Filed Apr. 24, 1978, Ser. No. 899,150
Int. Cl.[2] A61B 5/14
U.S. Cl. 128—763 **9 Claims**



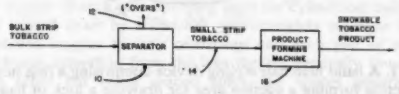
1. Finger stick blood collection apparatus comprising a collection vessel for collecting blood from a finger stick and having a capacity of less than two millimeters, said vessel having first and second open ends, said first end of said vessel having larger transverse dimensions than said second end, the smallest transverse dimension of said vessel being at said second end, said vessel having a portion adjacent said second end which is tapered toward said second end, said second end being the inlet end to said vessel, a cap having transverse dimensions greater than that of said first vessel end, means releasably coupling said first end of said vessel to one side of said cap, a hollow adapter connected at one end to and integral with the other side of said cap, the other end of said adapter being free and having means for a facilitating connection of the adapter to a source of suction, said cap having a flow passage therethrough for providing direct communication with the interior of said adapter and the interior of said vessel, separate means for temporarily closing said collection vessel, said vessel being expendable after a single use, a shipping container for said vessel, said container being open at one end, said vessel with its second end temporarily closed being disposed within said container, means on said cap radially outwardly of said first end of said vessel releasably coupling said cap to close said container.

4,210,157

SMOKABLE TOBACCO PRODUCTS

Earl E. Kohnhorst, Louisville; Thomas W. Summers, Fern Creek, and David L. Gordon, Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 721,138, Sep. 9, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,736
Int. Cl.[2] A24D 1/00; A24B 3/14, 1/02
U.S. Cl. 131—8 R **5 Claims**



1. An improved smokable tobacco product comprised of tobacco surrounded by a cylindrical wrapper in which said tobacco portion consists essentially of tobacco particles having a mean ratio of area to perimeter squared of at least about 0.049, a short dimension not in excess of 0.5 inch, and an arithmetic mean size of at least 1.93 mm, said particles being of a substantially normal particle size distribution.

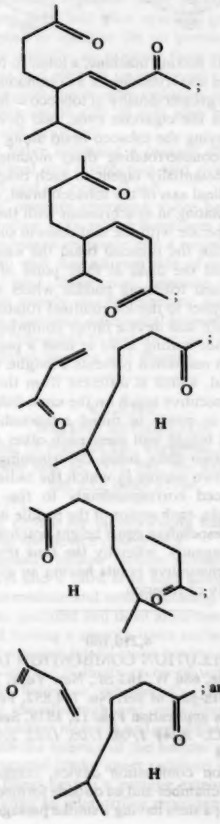
4,210,158

5-ISOPROPYL-3-NONENE-2,8-DIONE AS FLAVORANT AND AS A FLAVOR ENHANCER IN CONJUNCTION WITH SMOKING TOBACCO AND SMOKING TOBACCO ARTICLES

Joaquin F. Vinals, Red Bank, N.J.; Jacob Kiwala, Brooklyn, N.Y.; Richard A. Wilson, Westfield, and Braja D. Mookherjee, Holmdel, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,398
Int. Cl.[2] A24B 3/12
U.S. Cl. 131—10 R **6 Claims**

3. A smoking tobacco article comprising smoking tobacco and wrapped around said smoking tobacco a wrapper and in intimate contact with said wrapper and said smoking tobacco a cis or trans isomer of 5-isopropyl-3-nonene-2,8-dione or stereo isomer thereof having the structure selected from the group consisting of:



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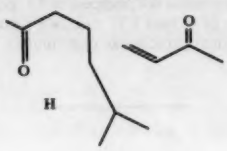
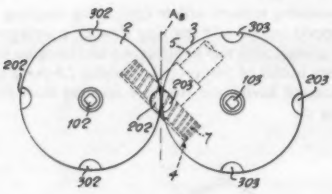


4,210,159

TOBACCO TRIMMING DEVICE

Rodolfo Quarenghi, Bologna, Italy, assignor to CIR - S.p.A. - Divisione Sasib, Bologna, Italy

Filed Jul. 20, 1978, Ser. No. 926,231
Claims priority, application Italy, Jul. 25, 1977, 12708 A/77
Int. Cl.[2] A24C 5/18
U.S. Cl. 131—21 D 1 Claim



1. In a cigarette making machine, a tobacco trimming device for the formation and trimming of a continuous tobacco braid which presents a greater density of tobacco at individual points corresponding to the cigarette ends, said device comprising means for conveying the tobacco braid along its longitudinal axis, a pair of counterrotating disks mounted substantially coplanar and substantially tagent to each other according to the said longitudinal axis of the tobacco braid, and a trimming paddle wheel, rotating in synchronism with the said disks and arranged to cooperate with the said disks in such a manner as to trim away from the tobacco braid the excess of tobacco projecting beyond the disks at their point of tangency, the paddles of the said trimming paddle wheel being arranged inclined with respect to the longitudinal rotational axis of the paddle wheel itself, said device futher comprising on each one of the two counterrotating disks at least a pair of peripheral notches of which one notch presents a height, with respect to the tobacco braid, which is different from the height of the immediately consecutive notch on the same disk, the two disks being arranged to rotate in timed relationship so that the notches of equal hieght will meet each other at the point of tangency of the two disks, while the trimming paddle wheel presents at least two sectors in which the radial length of the paddles is reduced correspondingly to the height of the notches in the disks, each sector of the paddle wheel cooperating with the corresponding equal height notches of the disks at their point of tangency, whereby the thus trimmed tobacco braid presents consecutive points having an alternatively differentiated density of tobacco.

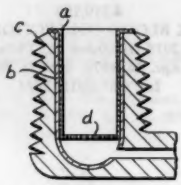
4,210,160

ANTI-POLLUTION COMBUSTION DEVICE

Anton E. Wunsche, 656 W. 162 St., New York, N.Y. 10032

Continuation-in-part of Ser. No. 764,852, Feb. 3, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,062
Int. Cl.[2] A24F 1/08, 1/06, 1/32, 3/02
U.S. Cl. 131—194 9 Claims

1. Anti-pollution combustion device, comprising a bowl having a tobacco chamber and an outside formed with a plurality of cooling ribs; a stem having a smoke passage communicating with said tobacco chamber and having a filter chamber interposed in said smoke passage for accommodation of a filter therein, said stem having a rear end provided with a mouthpiece; a liquid trap in said stem and communicating with said smoke passage intermediate said filter and said mouthpiece; a perforated disc lodged in said tobacco chamber of said pipe bowl above the point of communication of said tobacco chamber with said smoke passage and adapted to keep a charge of tobacco positioned upwardly of said point so as to prevent tobacco from contacting liquids collecting in said chamber below said disc; a ceramic compound coating lining said bowl; and a tubular metal insert mounted in said bowl surrounded by said compound, said disc being located at a lower end of said tubular insert.



4,210,161

CREME RINSES WITH HAIR HOLDING PROPERTIES

Julius Wagman, Chicago, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Jul. 3, 1978, Ser. No. 921,555
Int. Cl.[2] A45D 7/00; A61K 7/08
U.S. Cl. 132—7 15 Claims

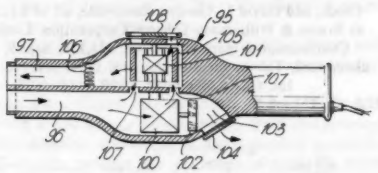
15. In the method of dressing hair wherein towel-dried hair is wetted with a creme rinse composition and thereafter rinsed, combed, set and dried, the improvement wherein said creme rinse composition is an aqueous composition containing from about 0.02 to about 2 weight percent of an anionic polymer and from about 0.1 to about 5 weight percent of a cationic surfactant capable of forming and having formed a water insoluble reaction product with said anionic polymer, said reaction product being suspended in said composition.

4,210,162

HAIR STYLING DEVICE

Bernard F. Dreyer, 742 Ludgate Ct., and Paul F. Paglericcio, 220 Cowley Dr., both of Ottawa, Ontario, Canada

Filed Mar. 27, 1978, Ser. No. 890,690
Claims priority, application Canada, Jun. 30, 1977, 281833
Int. Cl.[2] A45D 20/00
U.S. Cl. 132—9 15 Claims



1. A hand held hair styling device comprising a first housing section forming a suction area for drawing a lock of hair into said area, said housing defining an outlet from said area and a conduit extending from said outlet, said housing including passage means with supplemental air outlets disposed adjacent said area for supplying supplemental air to said suction area

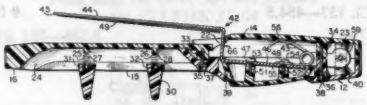
and into contact with said lock of hair, a second housing section releasably attached to said first housing section and containing a fan means for withdrawal of air from said conduit and providing pressurized air to said passage means, means for directing at least a portion of the air from said conduit back into said passage means, and conditioning means including a heating element located in the flow of air from said fan means to said passage means.

4,210,163

HAIR ROLLER DEVICE

Paul F. Savage, Plymouth, Mass., and Michael R. Pye, Cambridge, England, assignors to The Gillette Company, Boston, Mass.

Filed Dec. 18, 1978, Ser. No. 970,746
Int. Cl.[2] A45D 2/06
U.S. Cl. 132—33 R **10 Claims**



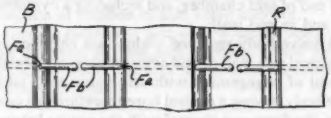
1. In combination with a plurality of generally cylindrical conductive interchangeable rollers of different inside diameters for making curls, a non-electric hair roller device including, a handle portion for gripping the device and a non-conductive rod portion coupled to said handle portion, normally biased clip means coupled to the device for frictionally holding a roller mounted on said rod portion, clip button means coupled to the device for releasing tension of said clip means on the roller, and compressible support leg means pivotably connected to said rod means for retaining the roller on the device when said clip button means is activated thereby releasing tension on the roller, said support leg means including a spring member connecting a non-conductive peg to said rod portion, the stack-up height of said support leg means and said rod being greater than the inside diameter of the roller.

4,210,164

SELF-HOLDING HAIR ROLLERS

Abraham Sidelman, Manchester, Ga., assignor to H. Goodman & Sons, Inc., Kearny, N.J.

Filed Feb. 23, 1978, Ser. No. 880,626
Int. Cl.[2] A45D 2/00
U.S. Cl. 132—40 **7 Claims**



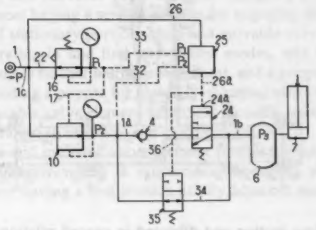
1. A hair roller including a cylindrical wall of solid plastic material and numerous pairs of hair detents, each said hair detent being a resilient monofilament having an end portion embedded securely in the cylindrical wall, each said monofilament detent being divided by a bend into an upstanding leg projecting from said cylindrical wall and an overhang extending from said upstanding leg to a free end, end portions of the hair detents of each pair emerging from the cylindrical wall at sites spaced apart by a distance approximately equal to the combined lengths of their overhangs and each pair of said overhangs extending from the legs thereof generally toward each other but being spaced apart, the spaces generally bounded by each pair of legs and the overhangs extending therefrom and the portion of the cylindrical wall between said pair of legs being free of elements projecting from the cylindrical wall.

4,210,165

PRESSURE REGULATING EQUIPMENT FOR AIR CUSHION

Kentaro Kitsugi, Kasukabe, Japan, assignor to Tokyo Automatic Control Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1978, Ser. No. 897,847
Claims priority, application Japan, Apr. 20, 1977, 52-48874
Int. Cl.[2] G05D 16/06
U.S. Cl. 137—102 **5 Claims**



1. Pressure regulating equipment for a large capacity air cushion, comprising:

a pilot operated pressure regulator including a downstream side and a pilot air receiving port;

a pilot pressure regulator being settable for a desired pilot pressure at its downstream side, said downstream side of said pilot pressure regulator being connected to said pilot air receiving port, said pilot operated pressure regulator being adapted to equalize the air pressure at said downstream side with the air pressure from said pilot pressure regulator at said pilot air receiving port;

a check valve, said check valve including an inlet connected to said downstream side of said pilot operated pressure regulator and an outlet;

a three way valve including a passage operable by an air pressure signal and connecting said outlet of said check valve with said air cushion; and

a differential pressure operating valve having a first inlet communicating with said downstream side of said pilot operated pressure regulator and a second inlet communicating with said downstream side of said pilot pressure regulator, said differential pressure operating valve adapted to supply an air pressure signal at an outlet thereof by a pressure differential between said inlet ports, said outlet connected to said three way valve and said air pressure signal opening said passage.

4,210,166

MIXING APPARATUS

Julius C. Munie, 73 Wayside Dr., Ferguson, Mo. 63135

Filed Sep. 14, 1977, Ser. No. 833,233
Int. Cl.[2] B01F 15/04
U.S. Cl. 137—271 **12 Claims**

1. A mixing device for incorporating base material into a carrier material, the device comprising:

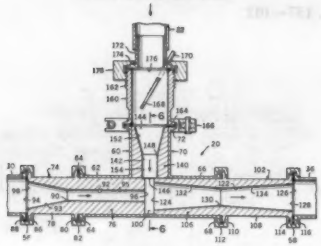
(a) a substantially hollow section including a first arm, a second arm and a third arm, said second arm being disposed intermediate and communicating with said first and third arms, said first and third arms being coaxially cylindrical and having a smooth inner surface,

(b) a carrier material intake insert having a smooth cylindrical outer surface slidingly received within said first arm said insert having a substantially unrestricted passage extending therethrough and providing an inlet orifice receiving carrier material and an outlet orifice communicating with the interior of the hollow section,

(c) a base material intake insert received within said second arm said insert having a passage extending therethrough and providing an inlet orifice receiving base material and

an outlet orifice communicating with the interior of the hollow section, and

(d) a discharge insert having a smooth cylindrical outer surface slidingly received within said third arm said insert having a passage extending therethrough and providing an inlet orifice, communicating with the interior of the



hollow section and disposed in spaced relation from the outlet orifice of the carrier material insert and the outlet orifice of the base material insert, and an outlet orifice, said discharge insert and said carrier material insert having stop means engageable with the receiving arms to define a fixed, axially spaced gap between said inserts.

4,210,167

EMISSION-FREE VALVE

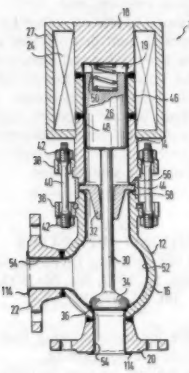
Werner Koppe, Weinstadt, and Rolf Prümmer, Kornwestheim, both of Fed. Rep. of Germany, assignors to Herion-Werke AG, Fellbach, Fed. Rep. of Germany

Filed Jun. 20, 1978, Ser. No. 917,396

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729522

Int. Cl.² F16K *27/10*; B23K *21/00*

U.S. Cl. 137—375 **3 Claims**



2. An emission-free valve, particularly a magnetically operated valve, for use in controlling the flow of fluids, especially poisonous, radioactive, aggressive and otherwise dangerous gases and fluids, comprising a housing including a housing member which has substantially spherical configuration and an internal surface surrounding a compartment for the respective fluid, said housing further including an annular valve seat member; a valve member movably mounted in said compartment and cooperating with said valve seat member to control the flow of the fluid through said compartment; and a plating layer of a corrosion-resistant material covering said internal surface of said housing member and also having a substantially spherical configuration corresponding to that of said housing member, said housing member and said plating layer obtaining their respective configurations during an explosion which not only simultaneously deforms initially cylindrical tubular and coaxially arranged housing member and plating layer preforms, but also welds said plating layer preform to said housing member preform so that said plating layer is explosion-welded to said housing member.

4,210,168

PRESSURE-RESPONSIVE VALVE UNIT FOR A FLUID CONTAINER

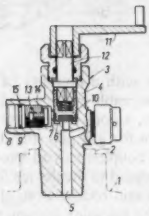
Keitaro Yonezawa, Kobe, Japan, assignor to Kabushiki Kaisha Neriki, Amagasakishi, Japan

Filed Oct. 12, 1978, Ser. No. 950,682

Claims priority, application Japan, Oct. 17, 1977, 52-139645; Aug. 28, 1978, 53-118137

Int. Cl.² F16K *15/02*

U.S. Cl. 137—454.5 **9 Claims**



1. A valve assembly for attachment to a fluid container, comprising:

a valve casing having a cavity therein, the outer end of said cavity being open, and the inner end thereof being connected to receive fluid from said container; and

a pressure-responsive valve unit received within said cavity, said valve unit including:

a sleeve-like main body removably secured within said cavity, said main body having a chamber in the inner end portion thereof opening to the inner end of said cavity, outlet bore means extending from the outer end of said main body to said chamber, and a valve seat disposed about the inner end of said outlet bore means within said chamber;

a cup-shaped adjuster plug removably secured within the open end of said chamber, and including a cylindrical side wall and an end wall;

a check valve body received within said chamber and said cylindrical side wall of said adjuster plug, and slidable into and out of engagement with said valve seat, said check valve body having a central bore therethrough communicating the front end thereof with the region between said check valve body and said end wall of said adjuster plug, and including an abutment face on the front portion thereof adapted to engage said valve seat, and radial wall means spaced rearwardly from said abutment face;

the portion of said check valve body disposed rearwardly of said radial wall means forming a sealed, sliding fit with said cylindrical side wall of said adjuster plug, said check valve body being in sealed engagement with said main body when said abutment face is in engagement with said valve seat, and said inner portion of said main body being provided with passage means for transmitting fluid from the inner end of said cavity to the region of said chamber forwardly of said radial wall means; and

spring means positioned between said adjuster plug end wall and said check valve body, arranged to urge said abutment face into engagement with said valve seat, said adjuster plug being adjustable axially of said main body to

adjust the pressure exerted by said spring means on said check valve body,

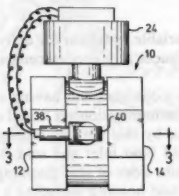
whereby said check valve body will normally be in engagement with said valve seat to maintain said valve unit in a closed condition, said check valve body will move toward said adjuster plug end wall against the force of said spring means to open said valve unit when fluid pressure having a greater value than the setting of said spring means is admitted through said passage means and acts on said radial wall means, and said check valve body will be again seated by said spring means to close said valve unit when the value of said fluid pressure falls below the setting of said spring means.

4,210,169

SPRINKLER CONTROL VALVE

Florencio N. Palma, 263 Keele St., Toronto, Ontario, Canada

Filed Aug. 18, 1978, Ser. No. 934,882
Int. Cl.[2] F16K *31/04*
U.S. Cl. 137—487.5 **4 Claims**



1. Control valve for producing cyclically increasing and decreasing water supply, comprising:

a valve body,

a port in said body for connection to a water supply line,

a port in said body for connection to a water output line,

means defining a passage in said body between said ports,

a rotary member rotatable to control the aperture size in said passage,

a controllable, reversible means for progressively continually rotating the rotary member,

pressure sensing means located to sense water pressure on the downstream side of said aperture designed to provide an output signal when said water pressure rises above a predetermined value,

control means for controlling said controllable reversible means, responsive to said output signal to reverse the direction of rotation of said valve member,

said rotating means and said control means being connected and designed so that said rotating means continues to rotate the rotary member in the same direction between said output signals.

4,210,170

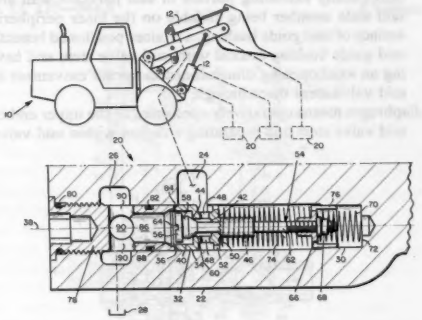
ANTI-CAVITATION AND OVERLOAD RELIEF VALVE FOR A HYDRAULIC SYSTEM

Sutton, Kalamazoo, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 17, 1978, Ser. No. 879,026
Int. Cl.[2] F16K *17/18*
U.S. Cl. 137—493.4 **4 Claims**

1. In a hydraulic overload relief and anti-cavitation protection system for hydraulic equipment having a hydraulic cylinder; a hydraulic valve having a housing; a first chamber within said housing in fluid communication with one end of said hydraulic cylinder; a second chamber within said housing in fluid communication with a fluid reservoir; a fluid passageway within said housing connecting said first and second chambers; a movable valve assembly positioned within said fluid passageway for operating in a first mode to block fluid flow between said first and second chambers, for operating in a second mode to permit fluid flow from said first chamber to said second chamber only when the pressure in said first chamber exceeds the pressure in said second chamber by a first predetermined amount, and for operating in a third mode to permit fluid flow from said second chamber only when the pressure in second chamber exceeds the pressure in said first chamber by a second predetermined amount; and said valve having a stationary portion positioned within said fluid passageway between said first and second chambers, said stationary portion including a valve seat; said movable valve assembly including a movable valve element having a sealing portion for engaging said valve seat of said stationary portion when said movable valve assembly is operating in said first and second modes, said movable valve assembly further having a valve seat, and a poppet mechanism including a poppet for sealingly engaging said valve seat of said movable valve element when said movable valve assembly is operating in said first and third modes;

wherein said movable valve element further includes a hollow interior which is symmetrical about an axis, said interior having a first portion axially adjacent said sealing



portion, a second portion axially adjacent said first portion and having a second diameter smaller than said first diameter, and a valve seat of said movable valve element being defined by the joint between said first and second interior portions,

said poppet mechanism includes a poppet which is substantially solid in cross-section and is substantially symmetrical disposed about an axis, said poppet having a head located at one end thereof, a body portion adjacent said head having a diameter smaller than the diameter of said head, a tapered sealing portion adjacent said body portion for sealingly engaging said valve seat of said movable valve element, and a stem adjacent said tapered sealing portion,

said stationary portion further includes a reduced diameter portion for engaging the head of the poppet in order to limit the travel thereof, and

means for maintaining fluid communication between said first and second chamber when the poppet engages the reduced diameter portion.

4,210,171

AUTOMATIC CONTROLLING VALVE FOR MAINTAINING THE RATE OF FLUID FLOW AT A CONSTANT VALUE

Sotokazu Rikuta, 24-7, 2-chome, Koun-cho, Maebasni-she, Gunma-ken, Japan (371)

Filed Jan. 23, 1978, Ser. No. 871,565
Claims priority, application Japan, Nov. 17, 1977, 52-138354
Int. Cl.[2] G05D *7/01*
U.S. Cl. 137—501 **2 Claims**

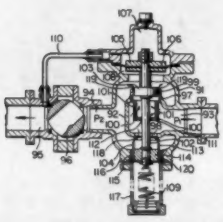
1. An automatic fluid control valve for maintaining a substantially constant fluid flow rate comprising:

a valve casing having an inlet for the introduction of fluid thereinto and an outlet for discharge of fluid therefrom;

a partition wall within said casing between said fluid inlet and fluid outlet, said partition wall subdividing said valve casing into an inlet chamber and an outlet chamber, said partition wall having a lower horizontally extending portion in which a valve port is formed, said valve port establishing communication between said fluid inlet and said fluid outlet, said partition wall also having an upper horizontally extending portion having an opening therethrough in vertical alignment with said valve port;

a valve steam movable linearly within said casing and being slidable within said valve port and said opening, said valve stem having valve means thereon cooperable with said valve port to regulate the flow of fluids therethrough in response to changes in fluid pressure differential, the lower portion of said valve stem carrying thereon an inner valve member comprising a cylindrical valve plug which is cooperable with said valve port and the uper portion of said valve stem carrying thereon a slide member, a guide bushing being positioned within the opening in said upper horizontally extending portion of said partition wall and said slide member being slidable on the inner peripheral surface of said guide bushing, a strainer positioned beneath said guide bushing coaxial with said valve stem and having an exial opening dimensioned to permit movement of said valve stem therethrough;

diaphragm means operatively connected to the upper end of said valve stem and separating a region within said valve



casing into a pair of pressure-differential chambers, said diaphragm defining together with an upper portion of said valve casing one of said pressure-differential chambers;

a fluids passageway of variable cross-sectional area settable to establish a predetermined fluid flow rate through the control valve located intermediate said fluid inlet and said outlet and thereby establishing first and second fluid pressures respectively on the upstream and downstream sides of said fluidspassageway; said fluids passageway being positioned in the outlet of said valve casing; and

conduit means communicating said valve casing outlet downstream of said fluids passageway with said one pressure-differential chamber, said inner valve member having a lower portion of lesser diameter than that of the valve plug and comprising a mounting member for mounting the inner valve member on said valve stem, said valve casing having a bottom plate in which there is formed an opening, a tube member positioned in said bottom plate opening and the outer peripheral surface of said mounting member being slidable on the inner peripheral surface of said tube member, said other pressure-differential chamber being located beneath said diaphragm external of said partition wall, said other pressure-differential chamber being in open communication with the upstream side of said fluids passageway, said strainer being exposed to the fluids entering the inlet of said valve casing to permit the passage of a portion of said fluids therethrough and through a clearance opening between said slide member and said guide bushing for introduction into said other pressure-differential chamber.

4,210,172

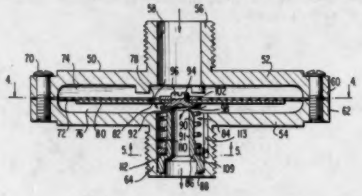
APPARATUS FOR DISPENSING FLUID UNDER PRESSURE

Merton R. Fallon, Thousand Oaks, Calif., and Thomas W. Clements, Ambler, Pa., assignors to Draft Systems, Inc., Northridge, Calif.

Division of Ser. No. 668,648, Mar. 19, 1976, Pat. No. 4,135,641. This application Sep. 22, 1978, Ser. No. 944,963

Int. Cl.[2] G05D *7/01*

U.S. Cl. 137—504 **3 Claims**



1. An automatic variable restrictor for delivering fluid under pressure through a faucet at a predetermined flow rate comprising:

a housing defining a chamber and having a fluid inlet and a fluid outlet in communication with said chamber;

a diaphragm carried by said housing segregating said chamber such that said fluid inlet and said fluid outlet lie on respective opposite sides of said diaphragm;

a valve carried by said housing including a valve seat defining a valve opening and a valve element spaced from said seat and carried by said diaphragm for movement toward and away from said seat, means carried by said housing for adjusting the spacing between said valve seat and said valve element, means engaging said diaphragm and biasing said valve element in a direction away from said valve seat said biasing means including a spring engaging said diaphragm at one end thereof, an annular element carried by said housing for axial movement toward and away from said diaphragm and providing a seat for the opposite end of said spring, and means carried by said housing for axially displacing said spring; said annular element being internally threaded, said outlet including an annular member having an externally threaded portion in threaded engagement with said annular element and carried by said housing for rotational movement, and means coupled between said housiing and said annular element for preventing rotational movement thereof;

said diaphragm having at least one aperture therethrough for delivery of fluid flowing through said inlet under pressure into said housing on one side of said diaphragm to the opposite side of said diaphragm and responsive to a pressure in excess of a predetermined pressure acting on the one side of said diaphragm to move said valve element toward said valve seat against the bias of said biasing means to induce an increased pressure drop across the valve opening and thereby maintain a predetermined rate of flow through said outlet.

4,210,173

SYRINGE PUMPING SYSTEM WITH VALVES

Pradip V. Choksi, Northridge, and Donald L. Johnston, Arcadia, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

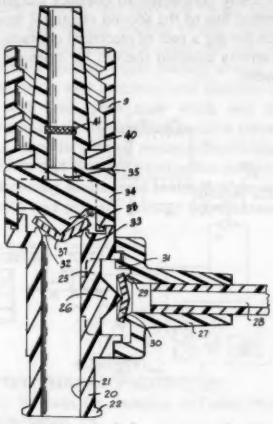
Continuation of Ser. No. 747,415, Dec. 6, 1976, abandoned. This application Sep. 6, 1978, Ser. No. 940,060

Int. Cl.[2] F16K *15/14*

U.S. Cl. 137—512.3 **7 Claims**

1. A pumping system for medical fluids with a hypodermic syringe means connected to inlet and outlet check valves, wherein the improvement comprises: a valved body with an

inlet passage from which pumped fluid is supplied, a syringe connecting passage, and an outlet passage, said passages being in fluid flow communication within said valved body; an inlet valve seat in the inlet passage facing downstream of inlet fluid flow; an outlet valve seat in the outlet passage facing downstream of outlet fluid flow; a flexible imperforate disk valve member fitted against each of the inlet and outlet valve seats; a pair of upstream facing posts internal of the valve body and connected to the valve body for respectively urging each disk valve member against its respective valve seat; one of said



posts biasing its valve member so as to require a substantially greater opening pressure in the range equivalent to a water head of 10 to 100 inches, while the other post is positioned to require the other disk valve to open at a pressure in the range equivalent to a water head of 0.1 to 10 inches; and a flexible conduit connected to the inlet passage and which conduit is adapted to attach to a medical liquid source, whereby fluid can flow from a fluid supply source through the inlet passage into the syringe on an intake stroke of the syringe and be pumped out through the outlet passage while fluid flow out through the inlet passage is blocked.

4,210,174

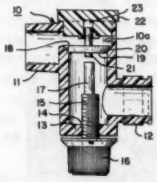
POSITIVE PRESSURE VALVES

Bela Eross, Bradfordwoods, Pa., assignor to Instrumentation Industries, Inc., Pittsburgh, Pa.

Filed May 30, 1978, Ser. No. 910,741

Int. Cl.[2] F16K *15/06*

U.S. Cl. 137—528 **6 Claims**



1. A positive pressure valve for inhalation therapy devices comprising a generally cylindrical air tight housing, spaced apart inlet and outlet ports in said housing, an elongate magnet member in said housing extending generally axially thereof, a valve seat in said housing between said inlet and outlet ports generally coaxially of said housing, a valve member movable coaxially of said seat and housing, a magnetically attracted member in said valve member coaxial with the magnet member and adjusting means on the housing acting to adjustably position the valve member relative to the magnet member whereby the distance between the magnet member and the magnetically attracted member are selectively varied, said inlet and outlet ports being side arms extending radially from said housing adjacent opposite ends of said housing, the ends of said housing being closed by caps, one of said caps having an axially movable carrier carrying the rod-shaped magnet, the other of said caps having guide means acting on the magnetically attracted material to maintain it generally axially of the housing.

4,210,175

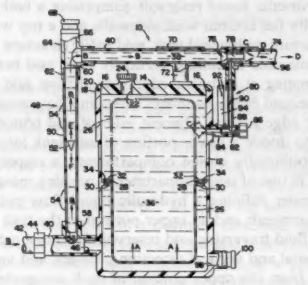
CHEMICAL INJECTION ASSEMBLY

Raymond R. Daniels, and Norman W. Scheid, both of 12745 49th St., North, Clearwater, Fla. 33520

Continuation-in-part of Ser. No. 748,237, Dec. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 669,333, Mar. 22, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 870,009

Int. Cl.[2] E03B *7/07*

U.S. Cl. 137—564.5 **8 Claims**

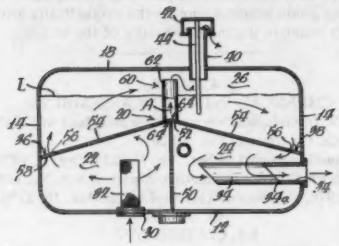


1. A fluid injection assembly of the type primarily designed to add predetermined amounts of fluid comprising a liquid to a flowing stream of liquid, said fluid injection assembly comprising: casing means; conduit means configured to define the path of travel of the liquid, said conduit means comprising a liquid inlet disposed in liquid-communicating relation to the interior of said casing means and further comprising liquid flow rate metering means operatively disposed along said conduit means, said liquid flow rate metering means comprising a transparent, tapered conduit section and a flow rate indicator movably disposed therein whereby displacement of said flow rate indicator within said conduit section is indicative of the quantity of liquid defining said flow stream; fluid supply means mounted on the interior of said casing means and at least partially surrounded by the liquid within said interior of said casing means; dispensing means mounted in fluid-communicating relation between said fluid supply means and the liquid flowing within said conduit means downstream of said liquid flow rate metering means, said dispensing means comprising adjustable valve means mounted in flow-regulating relation to fluid exiting said fluid supply means and fluid injection metering means comprising a transparent, tapered tube portion and a fluid injection indicator movably disposed therein operatively disposed in fluid-communicating relation between said adjustable valve means and said conduit means downstream of said liquid flow rate metering means, whereby displacement of said fluid injection indicator within said tube portion is indicative of the rate of fluid injection into said flowing stream; and chamber means connected to the outlet of said conduit means in receiving relation to said flowing stream and to the fluid from said fluid supply means, said chamber means being dimensioned and configured to provide mixing of fluid from said fluid supply means and liquid of said flowing stream.

4,210,176
HYDRAULIC LIQUID RESERVOIR WITH INTERNAL BAFFLE

Joseph L. Emming, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 14, 1978, Ser. No. 942,325
Int. Cl.[2] F16K *24/00*
U.S. Cl. 137—573 12 Claims



1. A hydraulic liquid reservoir comprising a tank having a substantially flat bottom wall, sidewalls and a top wall with a baffle structure within said tank, said baffle structure including a divider member extending vertically from said bottom wall and terminating at its upper edge spaced from said top wall, first and second baffle members extending downwardly from said upper edge toward adjacent sides of said bottom wall of said tank to divide a lower portion of said tank into first and second substantially closed compartments, a respective inlet and outlet in one of said compartments, opening means in each baffle member defining a hydraulic liquid flow path joining said compartments and an upper portion of the tank whereby hydraulic fluid traversing said reservoir follows a path including horizontal and vertical direction changes, and vent means extending from the upper portion of each compartment to a location adjacent said top wall, said vent means being spaced a greater distance from said bottom wall than said opening means and in communication with both of said compartments so that air in either of said compartments will be vented to the top of said tank without entering the liquid in said upper portion of said tank.

4,210,177
POSITIVE RESET SAFETY CONTROL SYSTEM FOR FRYING APPARATUS

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,078
Int. Cl.[2] F16K *35/00*
U.S. Cl. 137—613 1 Claim

1. A system for controlling the flow of gas from a gas source to a gas burner, the system comprising, in combination:

a normally closed gas valve having an electrical solenoid assembly connected to open the valve in response to the flow of electrical current through the solenoid;

a normally open gas valve having an electrical solenoid assembly connected to close the valve in response to the flow of electrical current through the solenoid assembly, the solenoid assembly including a pair of normally open electrical contacts coupled to the solenoid assembly to form a closed electrical circuit in response to the flow of electrical current through the solenoid;

the normally closed gas valve being connected in series fluid circuit relation with the normally open gas valve;

the series connected combination of the normally closed gas valve and the normally open gas valve being connected in series fluid circuit relation with the gas burner, the series connected combination having an inlet port disposed upstream of the valves to admit the flow of gas from the gas source;

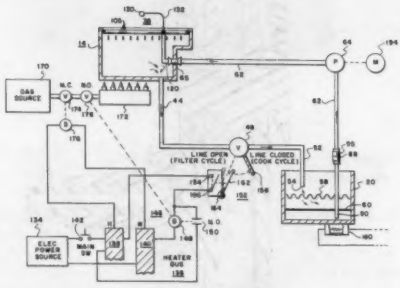
a first electrical bus for conducting electrical current;

an on-off switch connected to permit manual control of the application of electrical current from an external power source to the first electrical bus;

a second electrical bus for returning electrical current conducted through the first electrical bus to the external power source;

the electrical solenoid of the normally closed gas valve being electrically connected to conduct current from the first electrical bus to the second electrical bus;

a switch having a pair of electrical contacts and an actuator operatively coupled thereto for opening and closing the contacts;



the electrical contacts of the switch being connected in series electrical relation between the first electrical bus and the solenoid connected to the normally open gas valve;

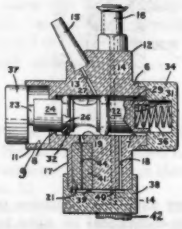
the solenoid of the normally open gas valve being connected in series electrical relation between the switch and the second electrical bus; and,

the normally open electrical contacts of the solenoid connected to the normally open gas valve being electrically connected in parallel circuit relation with the electrical contacts of the switch wherein the actuation of said normally open valve is non responsive to the opening and closing of the contacts after said contacts are first closed.

4,210,178
PERPETUAL BY-PASS FLUSHING DEVICE

Phillip H. Morse, 310 Ridge St.; Louis O. Noce, 78 Grant St., both of Glens Falls, N.Y. 12801, and Michael I. Basta, R.D., Diamond Point, N.Y. 12824

Filed Aug. 10, 1977, Ser. No. 823,212
Int. Cl.[2] F16K *11/07*; A61M *5/00*
U.S. Cl. 137—625.5 7 Claims



1. An animal or human infusion flushing device comprising a body having at least a primary passage therethrough, an intermediate portion of said passage being divided into a re-

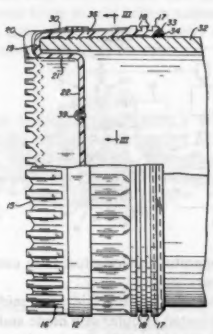
stricted channel and a flushing channel spaced from each other, liquid directing means comprising valve means movably mounted in said body and movable transversely to said liquid flow through said liquid passage, a pair of sealing means on said valve means defining a space between said sealing means, biasing means for biasing said directing means toward a normal resting position in which said restricted channel is open and said flushing channel is closed, said device being sized to be held in one hand and an extension at one end of said directing means extending outside of said body for exposure to a finger of said holding hand to move said directing means against said biasing means from said resting position to said flushing position in which said flushing channel is open and said restricted channel is closed, said primary liquid passage always communicating with said space, said restricted and flushing channels communicating with said space only when said directing means is in said resting and said flushing position respectively, said body has a secondary liquid passage therethrough generally parallel to said primary passage but independent of said liquid directing means, said secondary passage communicates with said primary passage downstream of said channels.

4,210,179

PIPE-THREAD PROTECTOR

Herbert W. Galer, Newnan, Ga., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1978, Ser. No. 971,978
Int. Cl.[2] B65D *59/00*
U.S. Cl. 138—96 T **11 Claims**



1. In a protector for pipe threads, which protector includes a plastic body and a metal band encircling said body, the improvement in which said body comprises:

an outer circumferential wall having corrugations extending along both its outside and inside surfaces;

a cylindrical inner wall concentric with said outer wall and spaced therefrom;

means at one end of said outer and inner walls joining said walls;

the space between said outer and inner walls forming an annular pocket for receiving the end portion of a pipe; and

means forming internal screw threads in said outer wall, at least certain of said threads being engageable with external threads on the pipe;

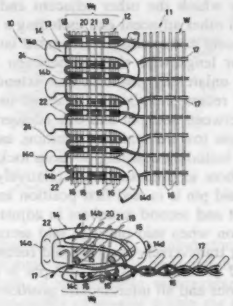
the corrugations in said outer wall enabling the walls to yield as the protector is placed on a pipe, and also enabling the plastic body to expand differentially with respect to the pipe.

4,210,180

WOVEN FASTENER STRINGER

Noritaka Tsubata, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,268
Claims priority, application Japan, Dec. 29, 1977, 53-85; Dec. 29, 1977, 53-86
Int. Cl.[2] A44B *19/10*
U.S. Cl. 139—384 B **6 Claims**



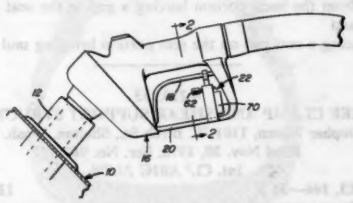
1. A woven fastener stringer comprising a woven tape formed with foundation warp and weft threads and consisting of a web section defining a major dimension of said tape and a woven filament section defining a longitudinal edge portion of said tape; a row of successively interconnected elongated loops woven into said filament section, each of said loops having a coupling head at one end thereof, an upper leg and a lower leg extending from said head in a common direction, and a heel portion at the opposite end remote from said head connected to a next adjacent one of said successive loops; a plurality of reinforcing cores extending longitudinally through said row of elongated loops; and a combination of a first group of binding warp threads extending along a relatively deep undulation path over said upper legs and alternatively overlying and underlying said foundation weft thread, a second group of binding warp threads extending along a relatively shallow undulation path over said upper legs in parallel relation to said first group of binding warp threads, and a binding weft thread interlaced with said first and second groups of binding warp threads substantially in a common plane defined by the upper surfaces of said upper legs and looping around said foundation weft at a position interiorly of said heel portion.

4,210,181

ADJUSTABLE PUMP NOZZLE LEVER PROP

Charles E. Clevenger, P.O. Box 151, Pensacola, Fla. 32504

Filed Apr. 25, 1978, Ser. No. 900,472
Int. Cl.[2] B65B *3/04*; G05G *5/06*
U.S. Cl. 141—392 **5 Claims**



5. In combination with a service station fuel supply hose nozzle of the type including a trigger lever and a trigger guard generally paralleling said lever, a prop for disposition between said lever and guard, said prop including first and second

elongated members including pairs of remote and adjacent ends, said adjacent ends of said members being supported relative to each other for relative longitudinal shifting of said members between lengthwise extended and retracted positions of said remote ends, means operative to releasably secure said members in adjusted shifted positions, means defining endwise outwardly opening and transversely extending generally parallel notches in said remote ends for embracingly receiving said lever and guard when said prop is interposed therebetween, one of said adjacent ends defining an endwise outwardly opening recess in which the other adjacent end is telescopingly engaged, said other adjacent end including a longitudinal slot, said one adjacent end having an elongated latch pin supported therefrom for lengthwise shifting between first and second latching and unlatching positions and extending transversely through said recess and slidably received in said slot, means connected between said pin and one adjacent end yieldingly biasing said pin toward said first position, said pin and other adjacent end including coacting portions locking said first and second members in predetermined relatively extended positions when said pin is in said first position and inoperative to lock said first and second members in adjusted relatively extended position when said pin is in said second position, said pin extending transversely through said recess and being slidably received in said slot when said pin is in said first and second positions and all intermediate positions therebetween.

4,210,182
METHOD OF MAKING A CHAIR
Peter J. Danko, 408 Gibbon St., Alexandria, Va. 22314
Filed Jun. 8, 1976, Ser. No. 693,837
Int. Cl.[2] B27D *1/08*; A47C *5/00*
U.S. Cl. 144—317 **7 Claims**

4. A method of making a chair from a flat blank of material including the steps of:

cutting at least one internal slot in the blank to form a rear leg portion having a free unattached terminal end;

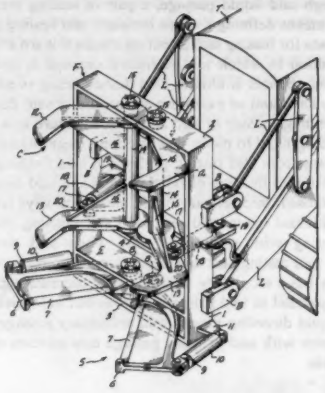
bending the cut blank into a continuous curvature under a predetermined bending pressure to form a front leg portion, a seat portion and a back portion into which the slot extends from the seat portion;

displacing the rear leg portion relative to the seat portion during said bending for extension of the rear leg portion from the back portion leaving a gap in the seat portion; and

placing a seat pad on the seat portion bridging said gap.

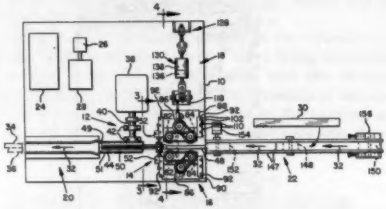
4,210,183
TREE CLAMP AND SHEAR SUPPORT STRUCTURE
Christopher Nilsen, 1101 W. Birch St., Shelton, Wash. 98584
Filed Nov. 20, 1978, Ser. No. 962,377
Int. Cl.[2] A01G *23/08*
U.S. Cl. 144—34 E **11 Claims**

1. In support structure for mounting on a tractor grapple means for clamping a tree and blade means for shearing the tree, the improvement comprising a box frame having horizontally spaced normally upright side members and several cross members spaced lengthwise of, extending between and rigidly connecting said side members, means mounting the grapple means on at least two of said cross members between said side



members, and means mounting said blade means on at least two of said cross members between said side members.

4,210,184
CIRCULAR RESAW APPARATUS AND METHOD
Douglas H. McGriff, Portland, Oreg., assignor to Producto Machinery Corporation, Portland, Oreg.
Filed Jan. 30, 1978, Ser. No. 873,711
Int. Cl.[2] B27B *1/00*, *31/00*; E05F *13/00*
U.S. Cl. 144—312 **10 Claims**



1. A resaw apparatus for longitudinally cutting an elongate wood cant, comprising:

(a) a circular saw for cutting said cant, said saw including a vertically-oriented circular saw blade and means for rotating said blade, said blade having two laterally-facing sides, a center axis of rotation, and a cutting edge, a portion of said cutting edge passing through a forward position for cutting said cant as said blade is rotated;

(b) table means disposed adjacent said blade for supporting said cant as it is cut by said saw, said table means having a flat horizontally-oriented supporting plate;

(c) guide means disposed adjacent said sides of said saw blade between the respective horizontal locations of said center axis and said forward position for keeping lateral movement of said blade within a predetermined tolerance;

(d) two sets of cylindrical rollers disposed on opposite sides of a predetermined path and defining a space therebetween for urging said cant longitudinally along said predetermined path against said saw blade at said forward position such that said cant is cut longitudinally along a predetermined line, each set having two such rollers whose axes are oriented substantially perpendicular to said supporting plate;

(e) pressure means connected to said two sets of rollers for urging said sets toward one another such that they pinch said cant therebetween;

(f) drive means connected to said rollers for rotating said rollers about their respective axes to urge said cant along said path;

(g) two movable carriages for supporting said two sets of rollers respectively, and slide means connected to said table means for supporting said carriages and permitting movement thereof laterally while constraining movement longitudinally with respect to said cant path; and

(h) a rocker arm pivotally attached to said table means at a center rocker-arm axis, a first adjustable linkage connected between said rocker-arm on one side of said rocker-arm axis and said table means for adjusting the pivotal position of said rocker arm with respect to said table means, a second linkage connected to said rocker arm on a first side of said rocker-arm axis and to a first said carriage, and a third linkage connected to a side of said rocker arm opposite said first side and to a second said carriage.

9. A method for cutting an elongate wood cant with a thin-kerfed circular saw blade having a central axis of rotation and a cutting edge with a plurality of gullets therein, comprising the steps of:

(a) rotating said saw blade through a forward cutting position;

(b) restraining said saw blade to within a predetermined tolerance of lateral movement by positioning a pair of guides on opposite sides of said blade at a position ahead of said axis of rotation;

(c) inserting said cant between two sets of at least two parallel rollers each, said two sets being laterally spaced from one another with respect to said cant;

(d) rotating at least one roller of each said set, rollers in one said set being rotated in the opposite direction as rollers in the other said set; and

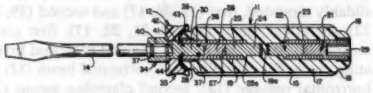
(e) pinching said cant between said two sets of rollers by applying lateral force to said rollers substantially halfway between the ends of said rollers, thereby urging said cant against said saw blade.

4,210,185

TOOL HANDLE ASSEMBLY WITH FREELY-REVERSIBLE SOCKET MEMBER

Ignacio Acevedo, 4066 Fenwick Rd., Columbus, Ohio 43220

Filed Nov. 22, 1978, Ser. No. 962,906
Int. Cl.² B25B *15/00*
U.S. Cl. 145—76 **9 Claims**



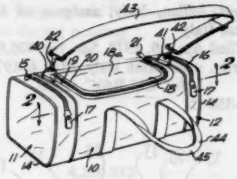
1. A handle assembly for receiving and applying torque to a tool element comprising a hand-grip assembly and a tool adapter assembly; said hand grip assembly and tool adapter assembly being mounted for rotation relative to one another; said hand grip assembly comprising a hand grip body, socket member rotatably mounted in said body and having an outwardly-opening adapter-receiving socket, a spring clutch mounted in said hand grip body in cooperation with said socket member to prevent relative rotation in one direction but permit relative rotation in a reverse direction; said tool adapter assembly having a finger-grip collar non-rotatably mounted thereon and having an inwardly extending shank portion adapted to removably fit in said adapter-receiving socket and an outwardly extending socket portion with an outwardly-opening tool-receiving socket for receiving the shank of a tool element, said adapter shank contacting the adapter-receiving socket member to provide a space between said hand grip body and said collar to permit said relative rotation at all times.

4,210,186

CAMERA BAG

Mark I. Belenson, 4799 E. Tenth La., Hialeah, Fla. 33013

Filed Aug. 2, 1979, Ser. No. 62,994
Int. Cl.² A45C *11/38*
U.S. Cl. 150—52 J **8 Claims**



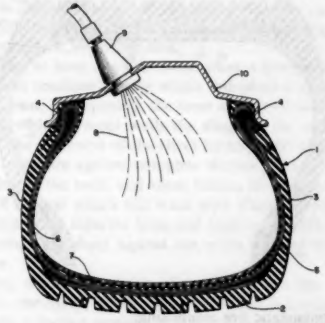
1. A camera bag comprising, in combination, a main bag portion of flexible material, said main bag portion having upper end opening means, a substantially rectangular camera bag insert member removably receivable within the said main bag portion through said upper end opening means, said bag insert member comprising peripheral side walls and end walls all of which walls are fabricated of a soft, pliable and flexible material serving as padding for contained articles, a plurality of interior partition wall members sub-dividing said bag insert member into a plurality of insert compartments, said partition walls also being fabricated of a soft, pliable and flexible material serving as padding for contained articles, a comparatively thick, resilient bottom wall member, means for removably securing said bottom wall member at the lower end of said bag insert member, carrying strap means attached to said main bag portion for carrying the camera bag, said main bag portion, said bag insert member and said interior partition wall members being of such flexibility and resilience as to permit flexure of the camera bag assemblage to comply with the shape of the body portion against which the camera bag rests while being carried.

4,210,187

PNEUMATIC TIRE HAVING SELF-SEALING FEATURE

William E. Egan, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Arkon, Ohio

Filed Jun. 14, 1978, Ser. No. 915,423
Int. Cl.² B60C *5/14, 17/00*
U.S. Cl. 152—347 **12 Claims**



1. A self-sealing pneumatic tire which comprises a pneumatic cured rubber tire having an integral, thin gauge, covul-

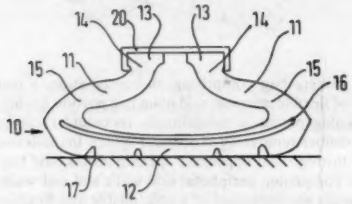
canized, resilient, rubber, closed cell structure, said closed cells containing a gas, disposed as its inside surface, in which the vulcanized rubber of said closed cell structure originally contains about 2 to about 60 phr compounded rubber processing oil and which has been, in its vulcanized state, subsequently oil treated to adsorb an additional 25 to 150 phr of a non-volatile oil compatible therewith.

4,210,188

PNEUMATIC TIRES FOR MOTOR VEHICLES HAVING COMPRESSION-STRESSED SIDEWALLS

Carlo Banchieri, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 10, 1978, Ser. No. 895,067
Claims priority, application Italy, May 4, 1977, 23148 A/77
Int. Cl.² B60C *13/00*
U.S. Cl. 152—353 C **7 Claims**



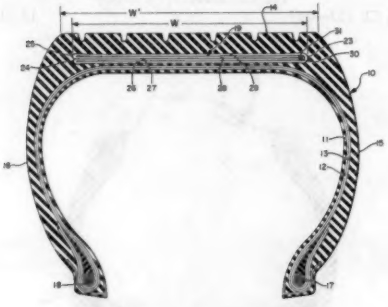
1. A pneumatic tire for motor vehicles comprising a top portion provided with a substantially inextensible annular reinforcement member and sidewalls which are subjected to compression stresses and are substantially non-reinforced, wherein said sidewalls are formed at least partially by an elastomeric composition selected from the group consisting of elastomeric compositions having a compressive dynamic elasticity modulus of absolute value between 8 and 13 MPa and wherein the tangent of the corresponding loss angle is between 0.03 and 0.15.

4,210,189

TIRE WITH A FOLDED ANNULAR REINFORCEMENT

Jack E. Brown, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 782,270, Mar. 28, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,812
Int. Cl.² B60C *9/22*
U.S. Cl. 152—361 FP **9 Claims**



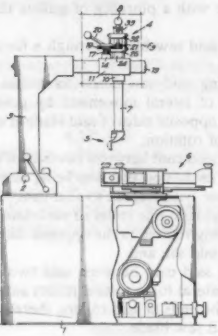
1. A pneumatic tire comprising:
(a) an innerliner;
(b) a plurality of carcass plies reinforced with cords and covering the innerliner;
(c) a tread and pair of sidewalls surrounding the carcass plies and terminating at a pair of annular, inextensible beads;
(d) an annular reinforcement disposed between the tread and radially outermost carcass ply, the reinforcement being a single ply of cord-reinforced rubber material which is folded so that the finally folded structure consists of three folded edges, two free ends and four superimposed interconnected plies, each of said plies having substantially the same width and being narrower than the single ply when unfolded, said free ends of the folded plies are covered over by a pair of connecting plies.

4,210,190

DEVICES FOR FITTING AND REMOVING TIRES

Eleutheer A. Hessels, Sint Niklaas, Belgium, assignor to Manta, Naamloze Vennootschap, Waasmunster, Belgium

Filed Apr. 4, 1977, Ser. No. 784,434
Claims priority, application Belgium, Apr. 7, 1976, 840441; Mar. 21, 1977, 255756
Int. Cl.² B60C *25/06*
U.S. Cl. 157—1.24 **9 Claims**



1. In a tire fitting and removing apparatus having a base, a wheel holder, an upstanding support on said base and a horizontal beam extending from said support over said wheel holder, the improvement comprising:
a tire engaging tool mounted at the lower end of a vertical rod (7), a body (10, 11) with a vertical passage (9) in which said vertical rod (7) is slidably mounted and with a horizontal passage (12) through which said horizontal beam (13) extends and on which beam said body (10, 11) is slidably mounted, first (19, 20, 17) and second (19, 20, 21, 22) operating means (19, 20, 21, 22, 17), first clamping means (18) controlled by and coupled with said first operating means for clamping said horizontal beam (13) in said horizontal passage (12), second clamping means (24–33) controlled by and coupled with said second operating means for clamping said vertical rod (7), said first and second operating means having common control means (19, 20) and third means (35) forming part of said second clamping means for lifting said vertical rod a predetermined height relative to said beam when said second clamping means is operated.

4,210,191

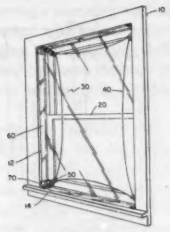
FILM-TYPE STORM WINDOW

Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Filed Jun. 30, 1978, Ser. No. 920,782
Int. Cl.² A47H *23/00*
U.S. Cl. 160—354 **5 Claims**

1. A protective flexible membrane structure installed in a framed opening with corners comprising a peripheral tension element, said tension element being attached to said membrane

in curved relationship to said framed opening, said tensioning element lying in the plane of said membrane, the segments of said peripheral tension element at each side of said opening lying along segments of a circle, each of said segments lying alongside a side of said frame opening and in the plane of said



membrane and corner tensioning means in the corners of said framed opening to apply force to said tension element whereby each of said segments of said peripheral tension element hold a side of said membrane in plane relationship within said opening and adjacent to the corresponding side of said framed opening.

4,210,192

AUTOMATICALLY CONTROLLED POURING METHOD AND APPARATUS FOR METAL CASTING

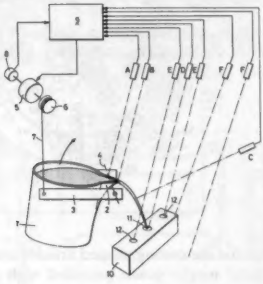
Gérard A. Lavanchy, Prilly-Lausanne, and Marc-Henri Rossier, Epalinges, both of Switzerland, assignors to Maschinenfabrik & Eisengiesserei Ed. Mezger, Kallnach, Switzerland

Filed Mar. 17, 1977, Ser. No. 778,588

Claims priority, application Switzerland, Mar. 22, 1976, 3540/76

Int. Cl.² B22D *1/02*

U.S. Cl. 164—4 **5 Claims**



1. In an apparatus for automatically controlling the pouring of molten metal into a series of closed casting molds, said apparatus including a lip-pour, or bottom-pour, casting ladle, a vertically extending pouring gate for each casting mold arranged so that said molten metal flows in a stream from the lip-pour, or bottom-pour, casting ladle into the pouring gate at the top of a mold and forms a free surface in said gate, the improvement comprising:

a radiation sensitive sensor for continuously sensing radiation emitted by said free surface of molten metal in the pouring gate, the sensor being arranged with respect to the geometry of the pouring gate such that it senses a quantity of emitted radiation from said free surface which varies directly with the height of said free surface in the pouring gate, said sensor including means for generating a signal in response to said sensing, so that said signal is a function of the height of said free surface in the pouring gate, control means for controlling the rate of flow of said stream in response to said signal, said control means being arranged for keeping said signal substantially constant during casting by maintaining the height of the free surface at a constant value by variation of the rate of flow to achieve more uniform casting performance, a second radiation sensor for continuously sensing the radiation emitted by a predetermined portion of the stream of metal flowing from the ladle, and for generating a second signal in response to said stream sensing, said second signal being a function of the rate of flow of said stream, and said control means being arranged for receiving both said signals and for keeping said first-mentioned signal substantially constant during pouring.

4,210,193

METHOD OF PRODUCING AN ALUMINUM-SILICON CASTING

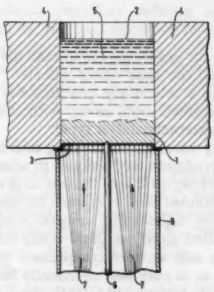
Martin Rühle, Stuttgart, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,329

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2728048

Int. Cl.² B22D *27/20, 15/00*

U.S. Cl. 164—4 **5 Claims**



1. A method of producing an aluminum-silicon casting having at least one localized fine-grain region comprising:

(a) providing a mold to receive the molten metal, said mold having an opening at a region where a fine-grain is required in the casting,

(a) providing a hollow member to contain a coolant, said member being open at one end,

(c) providing at least one thin metal sheet adjacent the region of the resulting casting where fine-grain is required, so as to close said opening, the inner surface of said sheet defining with the mold walls the shape of the resulting casting, the thickness of the sheet having been predetermined to ensure against complete distintegration of the latter due to the melt, said sheet having its mold surface made of a metal which will bond with aluminum-silicon, said sheet being separate from said hollow member,

(d) clamping said sheet against the mold by said hollow member,

(e) pouring molten aluminum-silicon metal into the mold whereby the metal effects a bond with the thin sheet,

(f) applying a cooling medium in said hollow member to the outer surface of said sheet,

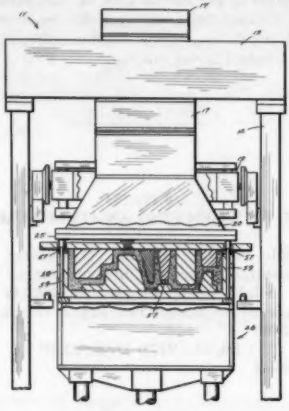
(g) allowing solidification, and thereafter

(h) removing the sheet from the casting by destruction of the sheet.

4,210,194
AUTOMATIC METHOD FOR PRODUCING MOLDS USING CHEMICALLY BONDED SANDS

Ronald A. Cina, and Albert D. Kluge, both of Lansing, Mich., assignors to Roberts Corporation, Lansing, Mich.

Division of Ser. No. 763,813, Jan. 31, 1977, Pat. No. 4,074,744.
This application Oct. 17, 1977, Ser. No. 842,724
Int. Cl.[2] B22C 9/12, 15/02
U.S. Cl. 164—16 1 Claim



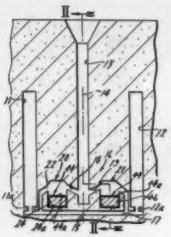
1. In a method for producing cured sand molds using chemically bonded sand, the steps which include:
(a) blow filling a selectively compressible mold assembly having an enclosed mold cavity with chemically bonded sand of the external catalyst type;
(b) controllably squeeze compressing said blow filled mold assembly a predetermined amount to selectively decrease the internal volumetric area thereof so as to compress said chemically bonded sand contained therein;
(c) continuously maintaining squeeze compression of the said blow filled mold assembly while introducing a gas catalyst into said squeeze compressed blow filled mold assembly so as to cure said chemically bonded sand; and
(d) removing the cured sand mold from said selectively compressible mold assembly.

4,210,195
METHOD OF TREATING CAST IRON USING PACKAGED GRANULAR MOLTEN METAL TREATMENT MOLD INSERTS

James C. McPherson, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1978, Ser. No. 968,945
Int. Cl.[2] B22D 23/00, 25/00, 27/20
U.S. Cl. 164—57 6 Claims

1. A method of treatng molten cast iron with a highly reactive and volatile treating agent, comprising:
(a) forming a mold having a casting cavity and a gating system, said gating system having side and bottom walls extending from one location of said gating system to define a treating chamber, the gating system providing an entrance to and an exit from said chamber each adjacent the upper portion of the chamber;
(b) folding a flat thin-guaged fiberboard blank into a module having a configuration effective to form a total enclosure and to fit snuggly within the lower portion of said treating chamber with no air gap between the side and bottom walls thereof;
(c) fully filling the interior of said module with a selected granular highly reactive and volatile treating agent;
(d) placing said filled module into snug fitting reltionship with at least the lower portion of said treating chamber including side walls and bottom wall; and
(e) introducing a predetermined quantity of molten cast iron into said gating system and thereby into said treating chamber, whereby the agent is preheated by metal which

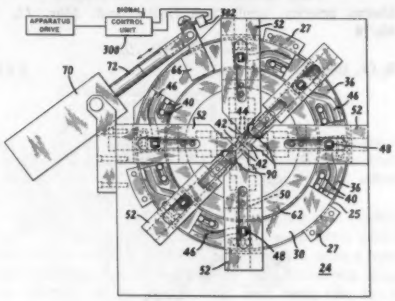


displaces, by disintegration, the side walls of said module and the exposed upper section of said fiberboard module is caused to disintegrate and be displaced by molten metal, which molten metal in turn reacts progressively with the treating agent from the top to the bottom of the module.

4,210,196
DIE CASTING APPARATUS

Lewis Weiner, 87-08 Santiago St., Holliswood, N.Y. 11423

Filed Jun. 1, 1978, Ser. No. 911,384
Int. Cl.[2] B22D 17/16, 17/24, 17/26
U.S. Cl. 164—152 26 Claims



1. Apparatus for die casting shaped articles comprising
a molten metal supply means provided with an outlet for feeding metal from said supply means to a mold,
a mounting frame disposed adjacent said outlet, said molten metal supply means being movable toward and away from said mounting frame,
a ring member carried rotatably in said mounting frame for rotation about a fixed axis,
a plurality of die members and a plurality of core members mounted on said frame for sliding movement radially of said fixed axis between open and closed positions, said die members and said core members being provided with complementary configured surfaces which define said mold when said members are closed corresponding to the shape of the article to be cast,
means associated with said die members for sliding said die members between their open and closed positions, such means including camming blocks carried on said ring member and having camming surfaces thereon, and cam followers connected with said die members, said cam followers engaging said camming surfaces to effect sliding movement of said die members responsive to relative

rotation between said mounting frame and said ring member, and

means associated with said core members for sliding said core members between their open and closed positions, the sliding means associated with at least one of said core members including a camming block carried on said ring member and having a camming surface thereon, and a cam follower connected with said one core member, said cam follower engaging said camming surface to effect sliding movement of said one core member responsive to relative rotation between said mounting frame and said ring member,

said ring member being provided with a plurality of openings therethrough, said openings extending in encircling courses about said ring member, said camming blocks being secured to said ring member with fasteners received in said openings, the positioning of said camming blocks on said ring member relative to the others being selectively changeable by receiving said fasteners in selected ones of said openings thereby to control the timing sequence with which said die members and any core members slid by oscillation of said ring member open and close during each oscillation of said ring member,

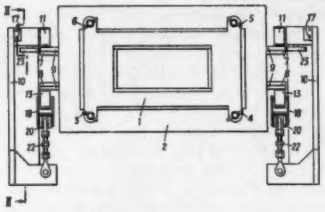
the mold surfaces of said die members and core members communicating with said molten metal supply means when said die members and core members are in closed position and said molten metal supply means is moved toward said mounting frame to bring the outlet therefrom into engagement with said mold.

4,210,197

LIFTING-TABLE-GUIDE ARRANGEMENT

Reinhard Hargassner; Günter Holleis, and Rudolf Hoscher, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 8, 1979, Ser. No. 18,771
Claims priority, application Austria, Mar. 14, 1978, 1805/78
Int. Cl.² B22D *11/04*
U.S. Cl. 164—416 **4 Claims**



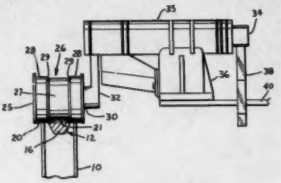
1. In a lifting-table-guide arrangement of a continuous casting plant, of the type including a mould lifting-table, a stand for guiding said mould lifting-table, a first and a second pair of vertical guide elements arranged opposite each other on opposing sides of said mould lifting-table, two pairs of rollers mounted on said opposing sides the rollers of each pair being positioned one above the other in said stand for supporting one element of the first pair of vertical guide elements, and a pair of counter bearing means provided on said opposing sides supporting the second pair of vertical guide elements, the improvement wherein each said counter bearing means comprises a rocker, two further rollers mounted in said rocker at a distance from each other for supporting one element of the second pair of vertical guide elements, and a bearing provided for mounting said rocker on said stand.

4,210,198

WHEEL-BAND TYPE CONTINUOUS CASTING APPARATUS

Joseph I. Cole, Staten Island, N.Y., assignor to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,542
Int. Cl.² B22D *11/06*
U.S. Cl. 164—433 **4 Claims**



1. A continuous casting apparatus having a rotatable casting wheel formed with an annular groove in the wheel rim, an endless metallic band mounted for movement along an endless path passing over and in contact with a portion of the casting wheel rim, means for introducing molten metal into the casting wheel groove under the endless band, and a band hold-down roller biasing the band firmly against the casting wheel rim overlaying the casting wheel groove and with said band hold-down roller having two cylindrical shoulders upon which said band is directly supported and an intermediate cylindrical roller section of reduced diameter relative to the diameters of said two cylindrical shoulders defining an annular roller groove straddled by said two shoulders forming a continuous gap between said shoulders of said hold-down roller into which gap an arched portion of the endless metallic band may intrude upon being heated by molten metal introduced into the casting wheel groove and thermally expanding.

4,210,199

HEAT EXCHANGE SYSTEM

Edward I. Doucette, York, and Samuel P. Shelley, Shrewsbury, both of Pa., assignors to Doucette Industries, Inc., York, Pa.

Filed Jun. 14, 1978, Ser. No. 915,308
Int. Cl.² F28F *9/26*
U.S. Cl. 165—70 **6 Claims**

1. A heat exchange system comprising in combination,

(a) a first tube system comprising a plurality of substantially parallel similar tubes, and

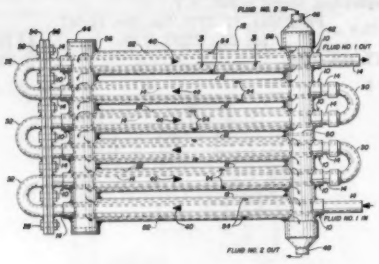
(b) return members connecting similar ends of adjacent tubes to form a first fluid passage having inlet and outlet means adjacent opposite ends thereof,

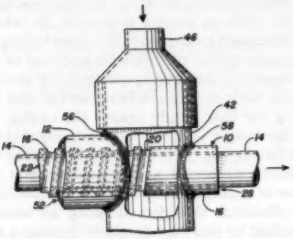
(c) a second tube system comprising a plurality of similar tubes of larger diameter than the tubes of said first system and respectively surrounding at least portions of the same between opposite ends thereof, and

(d) additional connecting means positioned inwardly from the outer ends of the tubes of said first tube system and connected between similar ends of adjacent tubes of said second tube system for intercommunication therebetween to form a second fluid passage having fluid inlet and outlet means surrounding the tubes of said first tube system;

(e) the improvement comprising leak-conducting means substantially coaxial and coextensive with said tubes of said first tube system and comprising supplemental tubular wall means surrounding said tubes of the first system in spaced relationship thereto and having outer ends extending beyond the ends of the tubes of said second tube system, said supplemental tubular wall means having a continuous spiral groove roll formed therein to compress the bottom of said groove into firm thermal contact with said tubes of the first system without substantial decrease of the wall thickness of said supplemental tubular wall means to provide a spiral passage around the tubes of said first

tube system for discharge of leaking fluid to atmosphere at opposite ends of said leak-conducting means to prevent contamination of fluids respectively in said first and second tube systems in the event of leakage openings occurring in any of the tubes on the interior of said second tube system.



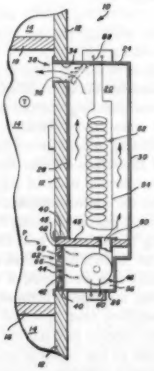


4,210,200

ENERGY SAVING DEVICE FOR HABITABLE BUILDING ENCLOSURES HAVING A HEAT CHANGING SYSTEM

Robert F. Vary, Round Lake, Ill., assignor to Anthony C. Mamo, Arlington Heights, Ill.

Division of Ser. No. 717,177, Aug. 24, 1976, Pat. No. 4,108,238.
This application Jun. 29, 1978, Ser. No. 920,623
Int. Cl.[2] F24H *9/20*; F28F *27/00*
U.S. Cl. 165—98 **2 Claims**



1. In a building construction embodying a habitable enclosure, the combination of

a temperature varying system for maintaining a predetermined temperature in said enclosure,

a housing for said temperature varying system which housing is disposed as to be subject to outdoor temperature influences,

an upper register constituting an opening for passage of air between the upper portions of said habitable enclosure and said housing, and

a lower register constituting an opening for passage of air between the lower portions of said habitable enclosure and said housing,

a mechanical shutter arrangement interposed in at least one of said registers and being operable to block passage of air between the habitable enclosure and the interior of said housing,

a solenoid device for actuating said mechanical shutter between open and closed positions, and

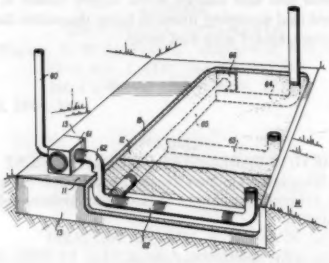
means for actuating said solenoid device upon operation of said temperature varying system.

4,210,201

LOW COST HEAT STORAGE TANK AND HEAT EXCHANGER

Edward J. O'Hanlon, Lake Georgia, Assembly Point, N.Y. 12845

Filed Feb. 28, 1978, Ser. No. 882,049
Int. Cl.[2] F28D *21/00*
U.S. Cl. 165—104 S **8 Claims**



1. An assembly for storing a quantity of heat in a heat storage means and later retrieving a substantial portion of said heat as required, and comprising:

a waterproofed tank-like enclosure formed of heavily insulated material and including at least one inlet and one outlet aperture, each extending through said enclosure;

pipe means extending through said enclosure between said inlet and outlet apertures for providing an air flow passageway through said enclosure and having means for allowing condensation to pass between the airstream within the pipe and said heat storage means;

blower means in fluid communication with said inlet for introducing a stream of air into said pipe means; and,

heat storage means comprising a mixture of solids and water surrounding said pipe means for receiving heat from the air flowing through said pipe means, for storing said heat within said enclosure over an extended period of time and for returning a substantial portion of said heat to the stream of air flowing through said pipe means.

4,210,202

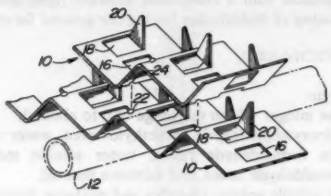
SUPPORT FOR HEAT EXCHANGE TUBES

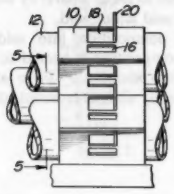
Robert C. Boyer, Catasauqua, and George J. Williams, Chalfont, both of Pa., assignors to Ecolaire Incorporated, Lehigh Valley, Pa.

Filed Mar. 30, 1978, Ser. No. 891,677
Int. Cl.[2] F28F *1/32*
U.S. Cl. 165—162 **14 Claims**

1. Apparatus for providing heat exchange between the first and second fluids comprising a shell supporting a tube bundle

having a plurality of rows of parallel tubes in said shell, means defining a fluid inlet for one end of said tubes and for defining a fluid outlet for the other end of said tubes so that said first fluid may flow through said tubes, said shell having an inlet and an outlet for a second fluid to be in surface contact with the outer periphery of said tubes, at spaced points along the





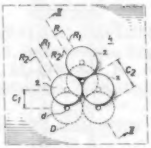
lengths of said tubes the tubes being supported by discrete tube support strips disposed between rows of the tubes, each support strip having a plurality of V-shaped members interconnected end to end with each leg of each V-shaped member having a generally triangular tab bendable out of the plane of its associated leg for selective control of flow of said second fluid in a direction longitudinal of said tubes.

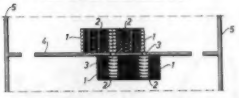
4,210,203

HEAT EXCHANGER APPARATUS

Peter H. E. Margen, and Rolf P. Näslund, both of Nyköping, Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Oct. 12, 1977, Ser. No. 841,473
Claims priority, application Sweden, Oct. 21, 1976, 7611720
Int. Cl.² F28D 7/10
U.S. Cl. 165—163 **13 Claims**





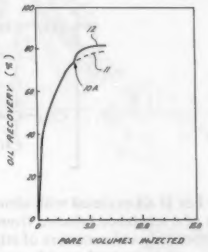
1. In a heat exchanger apparatus comprising a plurality of heat exchanging units each consisting of a sparsely wound, hollow, substantially circular pipe coil, closed at one end, every coil having a substantially identical outside diameter (D) and inside diameter (d), said coil being placed with its open end on a plate provided with a plurality of orifices, said plate screening off a flow passage for a first fluid, and each orifice being substantially axially aligned with a coil, the improvement that said coils are provided on both sides of the plate, that the coils on one side of the plate are arranged with equal centre-to-centre distances (C_2) in parallel first rows (R_1), that the coils on the other side of the plate are arranged with said centre-to-centre distances (C_2) in parallel second rows (R_2), that the first rows (R_1) and the second rows (R_2) are parallel and alternating, that the coils of the first row (R_1) are displaced substantially half the said centre-to-centre distance (C_2) in the direction of the row relative to those in the second row, and that adjacent opposing coils overlap each other substantially without covering the orifice in the plate of one of the opposing coils on the other side of the plate, a portion of the first fluid flowing radially into the interiors of the coils on a first side of the plate and out through the orifices substantially axially aligned with said coils to a second side of the plate, and another portion of the first fluid flowing into the orifices substantially axially aligned with the coils on the second side of the plate and radially out through the coils on the second side of the plate.

4,210,204

METHOD FOR PLUGGING HIGH PERMEABILITY ZONES IN SUBTERRANEAN RESERVOIRS

Charles A. Christopher, Jr., Broken Arrow, Okla., and Alvin O. Clauset, Jr., Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,182
Int. Cl.² E21B 33/138, 43/22
U.S. Cl. 166—270 **13 Claims**



1. A method for plugging high permeability areas within a subterranean reservoir penetrated by at least one injection well and at least one production well, said wells being in fluid communication with each other, comprising injecting through at least one of said wells an effective amount of an aqueous solution comprising fresh water and a pectic substance selected from the group consisting pectins, pectates, polygalacturonic acids and mixtures thereof into said high permeability areas wherein the aqueous solution contacts a brine which causes the pectic substance to form a gel thereby effectively plugging the high permeability areas within the reservoir.

4,210,205

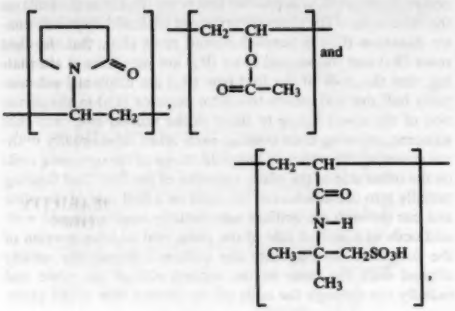
SECONDARY RECOVERY PROCESS

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

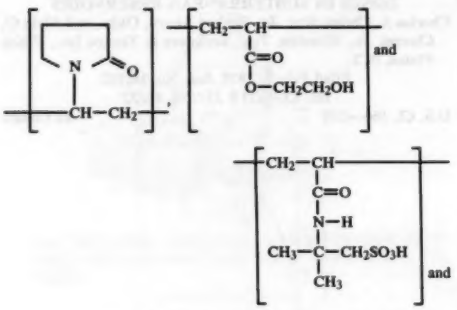
Filed May 22, 1978, Ser. No. 908,172
Int. Cl.² E21B 43/27
U.S. Cl. 166—271 **9 Claims**

1. A process for recovering hydrocarbons from a hydrocarbon-bearing formation containing acid-soluble components having at least one injection well and at least one production well penetrating the said formation and in fluid communication therewith, which comprises displacing through the formation a composition comprising an acidic aqueous polymer solution and recovering hydrocarbons through the production well, the said acidic aqueous polymer solution comprising a material selected from the group consisting of:

(I) Terpolymer A consisting of repeating units of:



(II) Terpolymer B consisting of repeating units of



(III) Terpolymer I or II alkoxylated with about 2 to about 100 weight percent of a substance selected from the group consisting of ethylene oxide and a mixture of ethylene oxide and propylene oxide wherein in the said mixture the weight percent of ethylene oxide ranges from about 60 to about 95, the said material being dissolved in an aqueous solution of a non-oxidizing mineral acid, wherein in Terpolymer A the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of vinyl acetate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein in Terpolymer B the weight percent of vinylpyrrolidone units will vary from about 65 to about 80, the weight percent of hydroxyethyl acrylate units from about 8 to about 15 with the balance being 2-acrylamido-2-methylpropanesulfonic acid, wherein the said terpolymer is present in the said acidic aqueous polymer solution in a concentration of from about 0.1 to about 10 weight percent and wherein the number average molecular weight of the said terpolymer is from about 10,000 to about 2,000,000.

4,210,206
HIGH TEMPERATURE WELL TREATING WITH CROSSLINKED GELLED SOLUTIONS

John W. Ely, and John M. Tinsley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 840,347, Oct. 7, 1977, abandoned. This application Oct. 11, 1978, Ser. No. 950,495
Int. Cl.[2] E21B *43/26, 33/138*
U.S. Cl. 166—294 **10 Claims**

1. A method of treating a well formation existing at a temperature in the range of from about 120° F. to about 350° F. with a temporary blocking agent comprising the steps of:

preparing a temporary blocking agent composition which forms a highly viscous crosslinked gel at the temperature of said well formation, said composition being comprised of water, a gelling agent present in the range of from about 0.1 to about 13 parts by weight per 100 parts by weight of said water and selected from the group consisting of water soluble polysaccharides having a molecular weight of at least about 100,000, said water soluble polysaccharides crosslinked with a compound selected from the group consisting of dialdehydes having the general formula:

$$OHC(CH_2)_nCHO,$$

wherein

n is an integer within the range of 0 to about 3,

2-hydroxyadipaldehyde, dimethylol urea, water soluble urea formaldehyde resins, water soluble melamine formaldehyde resins, and mixtures thereof,

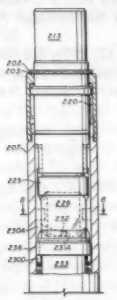
water soluble polyacrylamides and mixtures thereof, and hexamethoxymethylmelamine present in the range of from about 0.05 to about 5 parts by weight per 100 parts by weight of said water; and

introducing said composition into said well formation whereby said composition is heated to a temperature in the range of from about 120° F. to about 350° F. and formed into a highly viscous crosslinked gel in said formation.

4,210,207
VALVE APPARATUS

David M. McStravick, Houston, and William M. Roberts, Deer Park, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Mar. 14, 1979, Ser. No. 20,307
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—330 **8 Claims**



1. A valve apparatus for use in a subterranean well and carriable on a fluid transmission conduit insertable therein, comprising: ball valve head means having camway slot means defined exteriorly thereon; valve seat means having camway ball means secured thereto and carriable in said camway slot means to pivot said valve head means on said seat means to shift said apparatus between open and closed positions in response to manipulation of said fluid transmission conduit.

4,210,208

SUBSEA CHOKE AND RISER PRESSURE EQUALIZATION SYSTEM

Forrest E. Shanks, DeSota, Tex., assignor to Sedco, Inc., Dallas, Tex.

Filed Dec. 4, 1978, Ser. No. 966,091
Int. Cl.² E21B 7/12
U.S. Cl. 166—352 **16 Claims**

1. A subsea choke and riser pressure equalization system comprising, in combination:

a section of riser pipe;

a choke conduit line mechanically supported by said riser pipe;

a variable choke valve having an inlet port and a discharge port;

a gate valve having an inlet port connected in fluid communiction with the choke line and an output port connected in fluid communication with the inlet port of the variable choke for permitting diversion of fluid from the choke line to the variable choke; and,

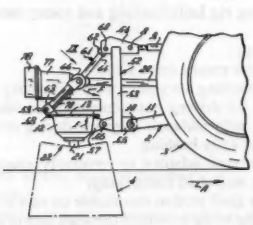
means connecting the discharge port of the variable choke in fluid communication with the interior of the riser section, said means including a discharge conduit extending from said choke valve in inclined relation with respect to the axis of said riser, whereby fluid diverted from said choke conduit is discharged into said riser in counterflow relation with respect to the upward flow of drilling fluid through said riser.

4,210,209

AGRICULTURAL IMPLEMENT

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 22, 1978, Ser. No. 880,091
Claims priority, application Netherlands, Feb. 22, 1977, 7701856
Int. Cl.² A01B 61/04
U.S. Cl. 172—47 **10 Claims**



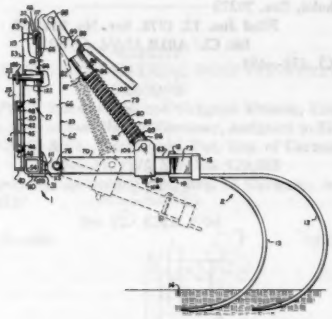
1. An agricultural implement attachment comprising frame means, coupling means on said frame means connectable to the three point hitch of a tractor, said coupling means comprising an upwardly extending multiple point trestle that is pivotably connected to said frame means with lower pivot means and an upper strut that normally prevents pivoting of the frame means relative to said trestle, said strut including two elongated arm parts that are pivoted to one another about a pivot axis at a junction, one of said arm parts being pivotably connected to said trestle and the other of said arm parts being pivotably connected to said frame means, an element normally fixing said arm parts in general longitudinal alignment to one another at said junction until overload, said element being an elongated multiple shearable pin that extends generally parallel to said strut through respective openings in said arm parts adjacent said junction, said pin extending in a direction transverse to said pivot axis.

4,210,210

QUICK MOUNTING MECHANISM FOR AGRICULTURAL IMPLEMENT

Dale E. Ankenman, Rte. 1, Almena, Kans. 67622

Filed Apr. 17, 1978, Ser. No. 897,114
Int. Cl.² A01B 63/26, 37/00
U.S. Cl. 172—272 **11 Claims**



1. A quick mounting mechanism for mounting a detachable tool support member on mobile agricultural equipment comprising:

(a) a frame member adapted for connection to said agricultural equipment;

(b) said frame member and said tool support member having a tool mounted orientation with respect to each other, wherein each has a surface in facing relationship to one another;

(c) at least one hooking assembly having a first part and a second part; said first part being attached to said frame member and said second part being attached to said tool support member, said first and second parts being engaged when said frame member and said tool support member are in said tool mounted orientation;

(d) a locking assembly having a first locking portion and a plurality of second locking portions; one of said second locking portions being associated with said frame member and spaced from said hooking assembly first part at a specified distance; another of said second locking portions being attached to said tool support member and spaced at a distance equal to said specified distance from said second hooking assembly part; said hooking assembly first and second parts being aligned and said locking assembly second portions being aligned when said frame member and said tool support member are in said tool mounted orientation; said hooking assembly parts and said locking assembly portions cooperating, each with one another upon placing said frame member and said tool support

member in said tool mounted orientation, whereby said locking assembly first portion locks together said locking assembly second portions and cooperates with said hooking assembly to secure said tool support member to said frame member; and

(e) securing means attached to and interbetween said agricultural equipment and said frame member, and wherein:

(1) said securing means comprises a member attached by one side thereof to said agricultural equipment and having a second side thereof with a vertically extending channel contained therein; said channel having a plurality of bolts slidably mounted therein and outwardly extending therefrom in a horizontal attitude; and

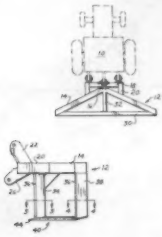
(2) said frame member having a receiver thereon for each of said bolts; each said bolt being received in said receiver respectively whereby a selected height position is determined by sliding said bolts in said channel whereupon a fastener for each said bolt is used to lock each said bolt in said selected position; whereby gross height adjustment of said tool support member is provided.

4,210,211

TURNROW PLOW

Mikel G. Chandler, and Von Chandler, both of P.O. Box 550, Tahoka, Tex. 79373

Filed Jun. 12, 1978, Ser. No. 914,538
Int. Cl.[2] A01B *35/14, 63/102*
U.S. Cl. 172—451 **3 Claims**



1. A turnrow plow adapted to be drawn by a farm tractor comprising:

a. a rigid frame,

b. a three-point hitch rigidly attached on the frame for attaching the frame to the tractor,

c. a V-shaped blade having

(i) two wings attached at

(ii) a forward apex,

d. an apex shank fixed to the frame and welded to the blade at the apex,

e. two wing shanks each fixed to the frame and to an end of the wings

f. each of the three shanks having a forward edge,

g. a knife edge on each of the forward edges,

h. said wings having

(i) a plow angle of about 12°,

(ii) a drag angle of about 25°,

j. said frame including a V-shaped frame member vertically over the V-shaped blade with a forward apex of the frame,

k. a back member connecting the rear of the V-shaped frame member, forming a triangle,

m. a hitch beam parallel to the back member and normal to the direction of draft attached to the apex of the V-shaped frame member,

n. the hitch beam attached by welded joint to the apex and attached by struts extending aligned with the direction of draft from each end of the hitch beam to the V-shaped member, and

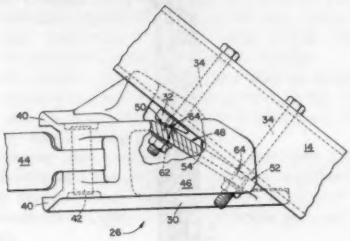
o. three connection points attached to said hitch beam thus forming said three-point connection.

4,210,212

TOOL MOUNTING WITH MEMBER LOCATABLE IN FIRST AND SECOND POSITION BETWEEN STANDARD AND FRAME

William W. Jackson, Bettendorf; James G. Steinbach, Davenport, both of Iowa, and Lon R. Geiger, Rock Island, Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 5, 1978, Ser. No. 922,046
Int. Cl.[2] A01B *15/00, 65/02*
U.S. Cl. 172—645 **20 Claims**



1. In an earthworking implement having a longitudinally extending frame member, at least two tool-carrying standards spaced along the frame member and extending therebelow, and an improved means for attaching the standards to the frame member comprising: a standard supporting bracket member; mounting structure between the bracket member and frame member including an upright surface on one member and upright first, second and third faces on the other member, said second and third faces adjoining respective sides of the first face and meeting said first face at such an angle as to form respective acute angles with the plane of the first face, each of said respective angles being substantially less than 90 degrees; means releasably fastening the bracket member to the frame member; and a spacer member locatable in a first and second position between the upright surface and the second or third faces respectively, said spacer member when in a first position between the upright surface and the second face acting to separate the first and second face from the upright surface and causing said surface and third face to abut and when in the second position between the upright surface and the third face acting to separate the first and second faces from the upright surface and causing the upright surface and second face to abut.

4,210,213

KELLY BUSHING GUARD

Huey P. Louviere, 1811 Donna Dr., Franklin, La. 70538

Filed Mar. 20, 1978, Ser. No. 890,642
Int. Cl.[2] E21B *41/00*
U.S. Cl. 175—195 **13 Claims**

1. A drilling rig kelly bushing and rotary table safety guard apparatus

Comprising:

a. A circular rotary drive table;

b. A kelly bushing associated with said rotary drive table and adapted for driving engagement therewith;

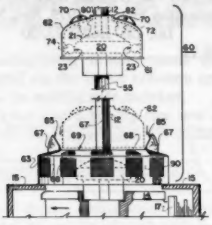
c. A drive kelly slideably engaged during drilling operation with said kelly bushing;

d. an outer shell adapted to coverably attach to said kelly bushing, said shell comprising,

an upper shell section mountable on said kelly bushing, an opening being provided through said upper shell allowing the passage said kelly therethrough, said upper shell section having inner surface means for attaching said

outer shell to said kelly bushing with said outer shell rising with the kelly bushing when it ascends from said rotary table during drilling operations;

a lower shell section integrally attached to said upper shell section and having an internal diameter greater than the internal diameter of said upper shell section, said lower shell providing an enlarged diameter greater than the diameter of the rotary table to be guarded and being



capable of registering with and guarding said rotary table during drilling operations when said kelly busing and said rotary table are engaged; and

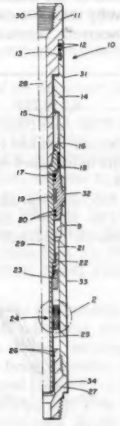
e. a free space area adjacent said lower shell section and said cushioned means, said free space providing an area in which said kelly bushing with which said shell is operating, can freely rotate without contact with said shell while said shell assumes a non operative resting position about the rig rotary table.

4,210,214

TEMPERATURE COMPENSATING HYDRAULIC JARRING TOOL

James R. Blanton, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1978, Ser. No. 949,350
Int. Cl.[2] E21B *31/00*
U.S. Cl. 175—297 **2 Claims**



1. A hydraulic jarring tool, comprising:

an outer member;

an inner member, said outer member and said inner member being telescopically arranged;

spline means between said outer member and said inner member for transmitting torque;

an anvil and hammer means for providing a jarring effect;

an operating fluid chamber between said inner member and said outer member containing operating fluid;

detent means for actuating said anvil and hammer means; and

seal means between said outer member and said inner member for providing a fluid seal to contain said operating fluid, said seal means including a seal and thermal relief valve assembly mounted for axial travel between said inner member and said outer member, said assembly comprising an annular seal body with a pair of inner seal rings mounted between said inner member and said annular seal body defining an inner chamber and a pair of outer seal rings mounted between said annular seal body and said outer member defining an outer chamber with a passage means extending from said operating fluid chamber to said inner chamber and said outer chamber and thermal relief valve means in said passage means for providing pressure equalization, said thermal relief valve means actuated at a preselected pressure and operating to allow limited flow of operating fluid out of said operating fluid chamber into said inner chamber and outer chamber and blocking flow into said operating fluid chamber.

4,210,215

ROCK DRILL WITH HELICAL DUST CONVEYING GROOVE

Wolfgang Peetz, Blitzenreute, and Siefgried Klaissle, Unterankenreute, both of Fed. Rep. of Germany, assignors to Hawera Probst GmbH & Co., Ravensburg, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,268
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735227
Int. Cl.[2] E21B *9/04*
U.S. Cl. 175—394 **12 Claims**

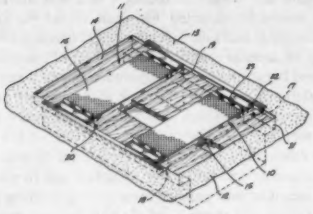
1. A rock drill, especially for rotary blow machines and drifters and stopers, with drilling cutting edges, which includes at least one drilling dust conveying groove, web means extending around the axis of said drill and confining at least one drilling dust conveying groove in axial direction, said web means comprising a back surface and a lateral surface forming a drilling dust supporting surface merging with the bottom of said at least one drilling dust conveying groove, said bottom of said at least one drilling dust conveying groove extending from said drilling dust supporting surface at an acute angle with regard to the axis of said drill rectilinearly up to said back surface of said web means, the ratio of the width of said at least one drilling dust conveying groove measured in the axial direction of said drill to the width of the back surface of said web means being in excess of 5:1, the wedge angle between said groove bottom and said drilling dust supporting surface amounting to from 70° to 80°.

4,210,216

HEATED PLATFORM SCALE

Glenn S. Godden, Lynnwood, Wash., assignor to Eldec Corporation, Lynnwood, Wash.

Filed Jan. 16, 1979, Ser. No. 3,865
Int. Cl.[2] G01G *19/02, 3/14, 23/00*
U.S. Cl. 177—134 12 Claims



1. A vehicle platform scale comprising:

a platform whereupon may be positioned at least one wheel of a vehicle;

at least one load cell, said load cell supporting said platform, said load cell deflecting in response to weight bearing upon said platform, said load cell having at least one strain gauge attached thereto, said load cell being enclosed in a load cell enclosure, said load cell enclosure having side walls and a floor, said load cell being spaced above said floor of said enclosure; and

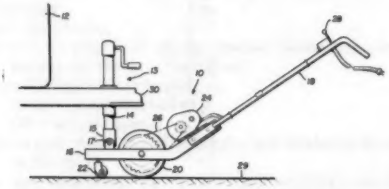
a heating means for preventing accumulation of ice or snow underneath said load cell, said heating means operating to maintain said floor of said load cell enclosure within a range of temperatures above 0° Celsius.

4,210,217

SELF-PROPELLED STEERING DEVICE FOR TRAILERS

Eugene Lachowicz, 20129 Rogge, Detroit, Mich. 48234

Filed Nov. 16, 1978, Ser. No. 961,406
Int. Cl.[2] B62D *51/04*
U.S. Cl. 180—13 4 Claims



1. An apparatus for attaching to and maneuvering a trailer having a telescopic jack support mounted on the tongue of the trailer comprising:

frame means;

a single driving wheel;

drive means operatively connected to said driving wheel for selectively causing said wheel to rotate;

a handle mounted on said frame means in tandem relationship with said driving wheel;

a single caster wheel located on the opposite side of said driving wheel from said handle and adapted to carry part of the weight of a trailer when the apparatus is attached thereto;

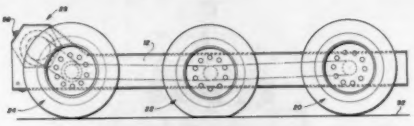
socket means located on said frame means between said drive wheel and said caster wheel, said socket means being pivotally mounted on said frame means for pivotal movement in a vertical plane about an axis parallel to the rotational axis of said drive wheel while being restricted against lateral movement in the vertical plane parallel to said drive wheel axis.

4,210,218

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Inc., Dallas, Tex.

Continuation of Ser. No. 799,328, May 23, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,857
Int. Cl.[2] B62D *21/00*
U.S. Cl. 180—24.12 30 Claims



1. An undercarriage assembly for supporting and propelling a mechanism, comprising:

an elongate hollow load-bearing frame adapted for connection to the mechanism;

at least three axle members each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members;

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending through the frame and being rotatably supported in opposite sides of the frame;

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering of the mechanism;

transmission means including sprockets and chains positioned within the frame and drivingly interconnecting at least two of the axle members; and

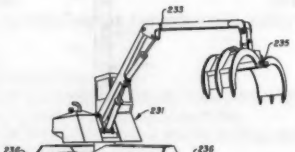
drive means including a motor mounted on the frame and operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members.

4,210,219

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Co., Incorporated, Dallas, Tex.

Division of Ser. No. 835,726, Sep. 22, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,292
Int. Cl.[2] B62D *21/00*
U.S. Cl. 180—24.12 9 Claims



1. A power loader vehicle, comprising:

(a) a pair of undercarriage assemblies each including:

an elongate hollow load bearing frame,

at least three axle members each having a wheel receiving member at one end thereof,

at least three wheel members each mounted on and secured to the wheel receiving end of one of the axle members,

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending through and rotatably supported in opposite sides of,

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members,

a plurality of sprocket means each positioned within the frame and each mounted on and secured to one of the axle members,

drive means comprising motor means and transmission means mounted on the frame between one endmost axle member and the middle axle member,

first drive sprocket means having two sets of teeth thereon positioned with the frame and mounted for rotation by the drive means,

second drive sprocket means mounted on the middle axle member,

first drive chain means constrained around the first drive sprocket means on one set of teeth and the sprocket means on the endmost axle member adjacent the drive means,

second drive chain means constrained around the first drive sprocket means on the other set of teeth and the sprocket means on the middle axle member, and

third drive chain means constrained around the second drive sprocket means and the sprocket means on the other endmost axle member,

the first and second drive chain means drivingly connecting the endmost axle member adjacent the drive means and the middle axle member to the output of the drive means for rotation under the action thereof;

(b) a crane frame;

(c) means supporting the crane frame on the elongate hollow load bearing frames of the undercarriage assemblies for pivotal movement with respect thereto about a normally vertically extending axis;

(d) a knuckle boom crane comprising an articulated arm mounted on the crane frame at one end thereof;

(e) a clamp mounted at the opposite end of the articulated arm for receiving, lifting and carrying materials therein;

(f) hydraulic cylinder means for extending and retracting the knuckle boom crane and for actuating the mechanical clamp;

(g) an operator's compartment mounted on the crane frame; and

(h) an engine mounted on the crane frame.

4,210,220

AXLE ASSEMBLY

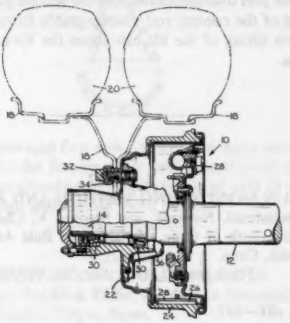
Jack S. Balter, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 789,748, Apr. 21, 1977, abandoned, which is a continuation of Ser. No. 679,433, Apr. 22, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,330

Int. Cl.[2] B60K *23/00;* **F16J** *15/10*

U.S. Cl. 180—70 R **1 Claim**

1. A drive axle assembly for vehicles having an axle shaft rotatably mounted within a housing, said axle shaft having an annular head formed on its end, fastening means to fasten said head to a hub, said hub being rotatably mounted on the outer surface of said housing and rotatably driven by said axle shaft, the improvement comprising said hub having a central bore having a cylindrical inner wall, having a radially extending face at an outer end of said hub and having an annular beveled portion between said wall and said face, said annular head having formed thereon a cylindrical annular lip disposed inwardly and projecting into the central bore of said hub, a radially extending portion of said head having a radially extending face facing in the same direction as the annular lip projects, the annular lip having a cylindrical outer surface spaced inward from said cylindrical inner wall of said hub, an annular groove provided in the axial outer end of the outer surface of said annular lip between the cylindrical outer surface and the radially extending face to accept an "O" ring sealing member, said fastening means comprise a series of threaded studs threadedly fastened in an end of said hub and extending outward from said radially extending face of said hub and in registration with a plurality of holes in said radially extending portion of said head and a locking nut threadedly disposed on each of said threaded studs to capture and fasten said head at said hub and to hold said faces in metal-to-metal contact, said annular lip extending longitudinally within and in spaced relation to said central bore of said hub and said annular lip being integral with said head, there being one "O" ring sealing member engaging said annular beveled portion provided at the end of said central bore of said hub inward of said threaded studs, said sealing member disposed in said annular groove, said "O" ring sealing member intimately contacting said beveled portion and said annular groove and captured thereby, said "O" ring sealing member in its captured substantially elliptical cross sectional form with a wedge-shaped outer portion between said radially extending wall of said annular head and said annular beveled portion of said hub and with a rounded portion extending inward in said annular groove filling substantially the entire volume of said annular groove and forming a liquid seal between said annular groove and said hub and said head, the portion of the outer surface of said annular lip being cylindrical in shape and having an outer diameter slightly less than the inner diameter of the central bore of said hub, such that lubricant stored in a reservoir formed at the end of the axle assembly within the central bore of the hub which lubricates bearings between the axle shaft and housing may flow through a passage formed between the outer surface of the annular lip and the central bore of the hub, whereby lubricant if under increased pressure would tend to push the round portion of the "O" ring and thereby push the "O" ring toward its wedge shaped outer portion between the radially extending wall of the axle head and the beveled portion of the hub.



4,210,221

TRANSMISSION REMOTE SHIFT SYSTEM OF THE DISCONNECT TYPE FOR A CAB-OVER CHASSIS

Russell G. McMillen, and Noel E. Leitzman, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,439

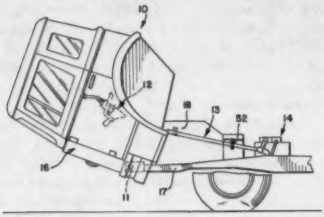
Int. Cl.[2] B60K *20/04*

U.S. Cl. 180—77 TC **4 Claims**

1. A break-away gear shift lever assembly for use in combination with a tilt cab pivotally mounted along a forward transverse axis to a chassis of a motor truck, comprising:

a three part coupling means having one part carried on a depending end of a gear shift lever, the one part engageable with an upwardly projecting second part carried on

an axially and angularly movable elongated control rod, the control rod extending underneath the tilt cab and having a free end, and a third part carried underneath the tilt cab and engageable with the free end of the control rod;



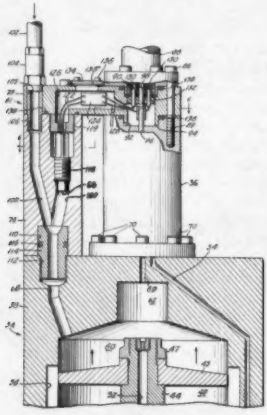
the one part disengageable from the second part and the free end of the control rod disengageable from the third part upon tilting of the tilt cab about the forward transverse axis.

4,210,222

AIR GUN MONITORING METHOD AND APPARATUS

Paul Chelminski, Norwalk, and Stephen V. Chelminski, West Redding, both of Conn., assignors to Bolt Associates, Inc., Norwalk, Conn.

Filed Jun. 22, 1978, Ser. No. 917,792
Int. Cl.[2] G01V *1/38*
U.S. Cl. 181—107 **8 Claims**



1. In a method for monitoring the firing of an air gun for determining the instant of firing, said air gun including a shuttle rapidly movable within an operating chamber to abruptly release pressurized gas from a pressurized gas charge chamber, such rapid shuttle movement causing fluid to be trapped within a portion of said operating chamber in front of the fast-moving shuttle to decelerate said shuttle, the invention comprising:

monitoring the fluid pressure within said portion of said operating chamber, and

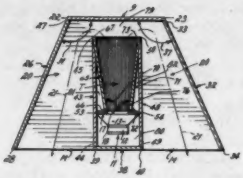
signalling the abrupt rise in that pressure which occurs when the fluid is trapped in front of the fast-moving shuttle for indicating the instant of firing of the air gun.

4,210,223

LOW FREQUENCY FOLDED EXPONENTIAL HORN LOUDSPEAKER APPARATUS WITH BIFURCATED SOUND PATH

Gary C. Gillum, and Paul W. Klipsch, both of Hope, Ark., assignors to Klipsch and Associates, Inc., Hope, Ark.

Filed Jan. 25, 1978, Ser. No. 872,256
Int. Cl.[2] H05K *5/00*
U.S. Cl. 181—152 **19 Claims**



1. A loudspeaker apparatus for operating in a low frequency range comprising:

a driver board having at least one aperture;

a back air chamber;

at least one electroacoustic transducer means for converting low frequency electrical signals into low frequency acoustic signals, said at least one electroacoustic transducer means being mounted to said driver board and immersed in said back air chamber; and

a folded exponential horn comprising structure defining a region, said structure including:

first and second divergent walls, each of said first and second divergent walls connecting to said driver board near said at least one aperture, and extending rearwardly away from said driver board at a first obtuse angle, said divergent walls terminating in an intermediate plane, said at least one aperture forming a throat for said horn;

first and second interior walls, each of said first and second interior walls connecting to said driver board and extending perpendicularly away from said driver board, said first interior wall converging with said first divergent wall and said second interior wall converging with said second divergent wall in said intermediate plane;

a rear wall opposite and spaced rearwardly from said intermediate plane;

first and second side walls, each of said first and second side walls connecting to said rear wall and extending forwardly away from said rear wall at a second obtuse angle, said side walls terminating in a frontal plane, said first side wall spaced opposite said first interior wall, said second side wall spaced opposite said second interior wall;

said divergent walls and interior walls being oriented with respect to said rear wall and side walls such that the distance therebetween increases from said throat at an exponential rate to a bifurcated mouth in said frontal plane;

a top wall connecting to said driver board, divergent walls, interior walls, rear wall and side walls; and

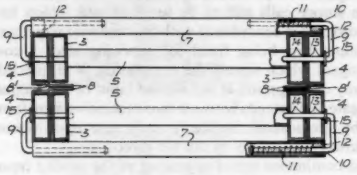
a bottom wall connecting to said driver board, divergent walls, interior walls, rear wall and side walls;

said top and bottom walls together with said divergent walls, interior walls, rear wall and side walls connecting said throat and said mouth and defining said region, said region forming a bifurcated sound path.

4,210,224
LONGITUDINALLY VARIABLE LADDER

Walter Kummerlin, In den Fressäckern, D-7120 Bietigheim-Bissingen, and Nikolaus A. Kummerlin, Humboldstrasse 26, D-7220 Schwenningen, both of Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,338
Int. Cl.[2] E06C *1/22, 7/06*
U.S. Cl. 182—207 9 Claims



1. A longitudinally variable ladder with at least two ladder parts which are displaceable relative to one another in their longitudinal direction, comprising

ladder parts each including two longitudinal struts and rungs connected therebetween, a first of said ladder parts with first of said two longitudinal struts thereof forms a guide for second of said struts of a second of said ladder parts, said second struts constituting inner struts engaging between said first struts, and first of said rungs of said first ladder part being connected with said first struts on a front side of said first struts, the latter constituting outer struts and being disposed outside of said second struts,

second of said rungs of said second ladder part being connected with said inner struts and lying between two planes, said two planes being defined by a front side and a rear side of said inner struts, respectively,

guide rails being operatively connected to said outer struts,

said struts of all said ladder parts have the same box-shaped profile,

said inner struts being guided between at least two of said first rungs of said outer struts and said guide rails,

said at least two first rungs being fastened on an upper end section of said outer struts, said second ladder part being withdrawable from said upper end section,

said guide rails being limited to the end section carrying the two rungs,

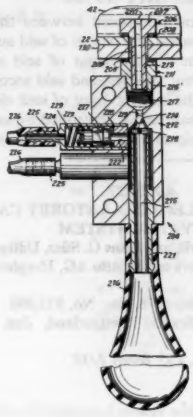
said guide rails at least indirectly engage on the rear side of said outer struts in said end section.

4,210,225
LIQUID OIL FEEDERS

John Baumann, Medford; Abraham Abrams, Roslyn Heights, and Marvin Broitman, Melville, all of N.Y., assignors to Uniwave, Inc., Farmingdale, N.Y.

Division of Ser. No. 769,132, Feb. 16, 1977, Pat. No. 4,159,047.
This application Oct. 20, 1978, Ser. No. 953,724
Int. Cl.[2] F16N *13/08*
U.S. Cl. 184—28 5 Claims

1. A liquid oil feeder comprising tank means for holding a supply of oil; and flusher means connected to a lower region of said tank means for receiving oil from said supply of oil by force of gravity and selectively transmitting said received oil in a stream, said flusher means including manifold means having a manifold chamber operatively coupled to the interior of said tank means and flexible chamber means operatively coupled to said manifold chamber, said manifold chamber and said flexible chamber means together defining an oil storage chamber, said manifold means including first normally open valve means communicating between said manifold chamber and the interior of said tank means so that said oil storage chamber is normally filled by gravity with oil from said tank means, and second normally closed valve means coupled to said manifold chamber and through which said stream of oil is to be delivered, said flexible chamber means being positioned to permit the selective manual application of pressure to said flexible chamber means, and therefore to the oil in said oil storage

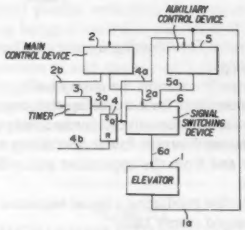


chamber to close said first valve means and open said second valve means for the forcing of at least a portion of the oil in said oil storage chamber in a stream out of said oil storage chamber through said second valve means.

4,210,226
ELEVATOR CONTROL APPARATUS

Youichi Ichioka, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1978, Ser. No. 916,580
Claims priority, application Japan, Jun. 20, 1977, 52-72963
Int. Cl.[2] B66B *5/02*
U.S. Cl. 187—29 R 2 Claims



1. An elevator control apparatus which comprises:

main control means coupled to an elevator for producing a plurality of first elevator control signals and for periodically producing a reset signal, said main control means including a first special purpose computer device for generating said first elevator control signals and said reset signal, said first special purpose computer device including a stored elevator main control program;

auxiliary control means coupled to said elevator for producing a plurality of second elevator control signals, said auxiliary control means including a second special purpose computer device for generating said second elevator control signals, said second special purpose computer device including a stored elevator auxiliary control program;

timer means coupled to said main control means for repeatedly measuring a predetermined time period starting from

the occurrence of said reset signal produced by said main control means and for generating an auxiliary control command signal upon the failure of said reset signal to reoccur prior to the end of said predetermined time period; and

signal switching means interposed between the output of said main control means, the output of said auxiliary control means, and the control input of said elevator for alternatively coupling said first and said second elevator control signals to the control input of said elevator, said signal switching means being controlled by said auxiliary control command signal from said timer means.

4,210,227

APPARATUS FOR SELECTING A STOREY CALL AT AN ELEVATOR SYSTEM

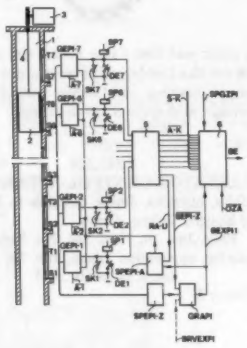
Stephan Zeindler, Gunzwil, and Hans G. Süss, Udligenswil, both of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland

Filed Dec. 26, 1978, Ser. No. 972,890

Claims priority, application Switzerland, Jan. 17, 1978, 450/78

Int. Cl.² B66B *1/18*

U.S. Cl. 187—29 R **1 Claim**



1. In an apparatus for selecting a storey call at an elevator system, comprising:

storage elements for storing the storey calls;

storey call transmitters for controlling the storage elements;

a scanner device for successively continuously scanning the storage elements from the lowermost storey to the uppermost storey and from the uppermost storey to the lowermost storey;

said scanner device producing a signal sequence corresponding to the stored storey calls;

at least one selector means for signalling the position of at least one elevator cabin;

upon coincidence of the scanner position and the elevator position-signal there being produced a coincidence signal;

the improvement comprising;

a first NOR-element having a first input, a second input and an output;

a storage composed of two NOR-elements;

said storage having a first input, a second input and an output;

the first input of the first NOR-element being capable of carrying the coincidence signals;

the output of the first NOR-element being connected with the first input of the storage;

the second inputs of the first NOR-element and the storage being connected with one another and carrying an information signal characterizing the operating state of the elevator cabin and the doors;

a second NOR-element having a first input, a second input, a third input and an output;

the output of the storage being connected with the first input of the second NOR-element;

the second input of the second NOR-element carrying a signal train which has been placed in order in acccordance with the timewise sequence of the storey call inputs for servicing released storey calls;

the third input of the second NOR-element receiving a signal train produced by a square wave generator;

the storey calls still to be serviced and which have been ordered in accordance with the timewise sequence of their input first being freed for servicing after a continuous signal which signals the completion of all preceding storey calls appears at the second input of the second NOR-gate and extends between two successive signals produced by the scanner device in each case upon scanning the lowermost storey in the UP-direction;

said continuous signal appearing at the second input of the second NOR-gate as the storey call signal;

a control signal appearing at the output of the second NOR-element after simultaneous occurrence of the information signal and the coincidence signal at the inputs of the first NOR-gate and which information signal signals the standstill of the elevator cabin with closed doors; and

said control signal corresponding to the storey call signal situated closest to the coincidence signal in the direction of travel of the scanner device.

4,210,228

CONTROL METHOD

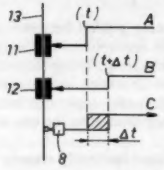
Harri Vaarala, 33720 Tampere 72, Finland

Filed Jun. 16, 1978, Ser. No. 915,999

Claims priority, application Finland, Jun. 28, 1977, 772005

Int. Cl.² B66B *5/16*

U.S. Cl. 187—73 **7 Claims**



1. In a control system for a load carrying output member driven by a command signal, the combination comprising;

(a) a first means having an engaged position to prevent movement of said output member, said first means disengaging said output member in response to said command signal,

(b) second means having an engaged position to prevent movement of said output member, said second means disengaging said output member in response to said command signal after a predetermined time delay, and

(c) detecting means for sensing and signalling the movement of output member during said time delay.

4,210,229

DISC BRAKE ASSEMBLIES

John R. Rees, Halesowen, England, assignor to Girling Limited, Birmingham, England

Filed May 26, 1977, Ser. No. 800,887

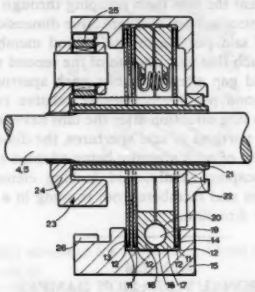
Claims priority, application United Kingdom, May 26, 1976, 21757/76; Dec. 11, 1976, 51787/76

Int. Cl.² B60T *1/06;* F16D *55/02, 55/14*

U.S. Cl. 188—18 A **11 Claims**

1. A disc brake assembly comprising a stationary housing, a stationary surface in said housing, a shaft assembly having a

first shaft portion and a second shaft portion surrounding and rotatable relative to said first shaft portion, said second shaft portion being rotatable in response to rotation of said first shaft portion, at least one rotatable friction disc having friction linings and slidably keyed to said second shaft portion, actuating means for moving said friction disc axially into frictional engagement with said stationary surface to brake said shaft assembly to slow or stop the same, said first shaft portion



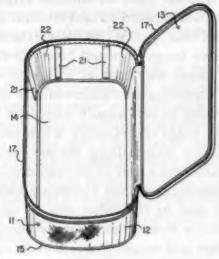
comprising means for transmitting a driving torque directly from a differential unit to a wheel, and a reduction gear train through which said second shaft portion is driven by said first shaft portion without magnifying said driving torque and comprising means whereby said second shaft portion will rotate at a greater speed than said first shaft portion is, and when the brake is applied, said first shaft portion is braked proportionately in response to braking of said second shaft portion to brake said shaft assembly.

4,210,230

FLAT-PACK LUGGAGE CASE

Jay H. Weiner, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Apr. 26, 1979, Ser. No. 33,463
Int. Cl.[2] A45C *7/00*
U.S. Cl. 190—43 **7 Claims**



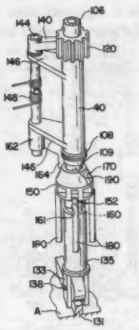
1. A flat-pack luggage case having a body and a lid hinged thereto wherein the body and lid have flexible walls and are collapsible to a flat position, the improvement comprising a plurality of short relatively thin flexible sheets having an edgewise rigidity optionally installable separately in certain fixed positions respectively in the case to support the flexible walls of said body and impart a structured appearance thereto, and removable therefrom to flat non-fixed positions in the case for imparting alternatively thereto a flat-pack appearance.

4,210,231

POWER WHEEL FOR FOLDING DOORS

Robert F. Seitz, Mentor, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Oct. 27, 1978, Ser. No. 955,159
Int. Cl.[2] F16D *67/00*
U.S. Cl. 192—8 R **7 Claims**



1. A source of rotational power which includes in combination:

a shaft to be driven,

a housing drivingly connected to said shaft and enclosing a portion thereof within a housing cavity,

at least one opening in said housing wall oriented generally transversely to said shaft communicating said cavity with the exterior,

an elongated member having an enlarged portion adjacent a first end thereof,

said cavity including an enlarged portion adjacent the inner end of said opening to receive said enlarged portion of said elongated member,

a second end of said elongated member opposite said first end extending exteriorly of said housing with an elongated portion of said elongated member connecting said first and second ends,

said elongated portion extending through said opening,

said opening being of such size and shape that said enlarged portion of said elongated member is retained in the enlarged portion of said cavity and is prohibited from passing through said opening and said elongated portion of said elongated member is free to move within said opening from a position at which it is substantially parallel to said shaft to a position at which it is substantially transverse to said shaft.

4,210,232

CLUTCH MECHANISMS WITH TWO CLUTCH PLATES

Carlo Beccaris, Santena, Italy, assignor to Société Anonyme Francaise Du Ferodo, Paris, France

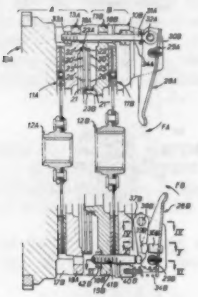
Filed Dec. 15, 1977, Ser. No. 860,846
Claims priority, application France, Dec. 16, 1976, 76 37871
Int. Cl.[2] F16D *21/06*
U.S. Cl. 192—48.8 **10 Claims**

1. A clutch mechanism of the kind comprising two clutch assemblies, each said clutch assembly having a first plate adapted to be fixed for rotation with one shaft, a clutch plate mounted for axial movement with respect to said first plate and adapted to be fixed for rotation with another shaft, a second plate mounted for axial movement with respect to said first plate and fixed for rotation therewith, resilient means for urging said second plate to an engagement or clutching position in which said clutch plate is clamped between said first and second plates;

wherein the improvement comprises said resilient means

including at least two Belleville type spring washers in nested relation and converging in the same general direction;

two spacer ring members interposed between said spring washers, one said spacer ring member being disposed proximate to the inner peripheries of said spring washers, and the other said spacer ring member being disposed



proximate to the outer peripheries of said spring washers, said two spacer ring members being the sole means of interconnection between said spring washers;

said spring washers coacting with each other and being disposed axially between said second plate of one said clutch assembly and said second plate of the other said clutch assembly.

4,210,233

CLUTCH ASSEMBLY

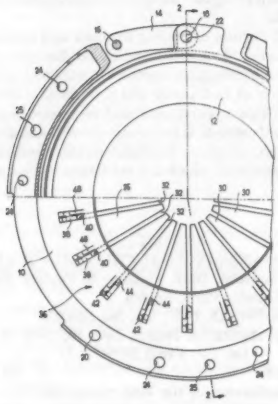
Pierre Courbot, Villiers le Bel, France, assignor to Société Anonyme DBA, Paris, France

Filed Apr. 17, 1978, Ser. No. 896,839

Claims priority, application France, May 10, 1977, 77 14231

Int. Cl.[2] F16D *13/50*

U.S. Cl. 192—89 B **8 Claims**



1. A clutch assembly comprising a cover-forming member rotationally connected to a pressure plate and axially movable relative thereto, and a resilient annular member comprising an outer peripheral portion axially connected to the pressure plate and a central portion adapted to be engaged by operating means, fulcrum means being provided between the resilient member and the cover-forming member, said resilient member being adapted to pivot around said fulcrum means to axially shift the pressure plate relative to the cover-forming member in a clutch actuating direction on actuation of the operating means, the fulcrum means comprising tabs extending axially from a first one of said members through corresponding apertures in the second member, wherein a free end of each tab is bent radially before assembly of said members to define an axial gap adapted to receive at least one portion of the second member after assembly, each aperture in the second member comprising at least one first portion permitting axial introduction of the corresponding tab, at least one locking element being provided to prevent the tabs from escaping through said apertures after their introduction, the respective dimensions of said axial gap and of said portion of the second member before assembly being such that said portion of the second member is prestressed in said gap after assembly, each aperture further comprising a second portion permitting relative rotation of said members in a first direction after the tabs have been introduced in the first portions of said apertures, the dimensions of said second portion of each aperture being adapted to prevent the tabs from escaping axially, said locking element being adapted to prevent said members from rotating in a direction opposite said first direction.

4,210,234

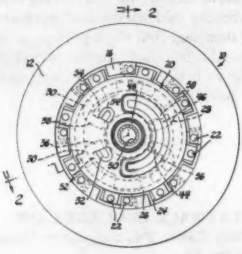
TORSIONAL VIBRATION DAMPER

Milford F. Jones, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1978, Ser. No. 932,117

Int. Cl.[2] F16D *3/14*; F16F *15/10*

U.S. Cl. 192—106.1 **3 Claims**

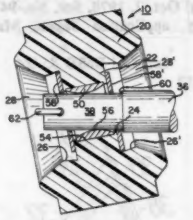


3. A torque transmitting clutch and damper assembly comprising; an annular friction disc; an annular retainer member having an outer diameter secured to said friction disc, an inner diameter, and a pair of axially offset radially extending circumferentially spaced drive tangs disposed between the inner and outer diameters; an output hub coaxial with said retainer having a pair of radially extending circumferentially spaced driven tangs each being parallel to and axially displaced from one or the other of said drive tangs respectively when said clutch and damper assembly is not transmitting torque; and preloaded torsion spring means having a pair of circumferentially spaced ends with each end having a surface extending radially inward and engageable with one or the other sets of said drive and driven tangs respectively to maintain a predetermined circumferential space between said respective sets of drive and driven tangs when no torque is being transmitted by said clutch and damper assembly and for permitting relative angular movement between said retainer member and said output hub while transmitting torque therebetween and maintaining contact with one of the drive or driven tangs during torque transmission, and each spring means having an arcuate recess adjacent said radially inward extending surface to accommodate the drive or driven tang not in contact with the spring means during torque transmission, said spring ends being urged into abutting relation after a predetermined amount of relative angular movement occurs to prevent further relative angular movement between said retainer member and said output hub.

4,210,235
BOAT SUPPORT ROLLER

Lawrence N. Johnson, 120 West High Dr., Spokane, Wash. 99203

Continuation of Ser. No. 796,803, May 13, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,106
Int. Cl.[2] B60P 3/10
U.S. Cl. 193—37 8 Claims



3. A roller structure for supporting a boat on a trailer or the like comprising

shaft forming means for carrying a boat supporting roller for rotational movement relative thereto,

a roller body carried by said shaft forming means in a position to engage the hull of a boat when the boat is moved into supportive contact thereupon,

said roller body having a circumferential face extending in an axial direction relative to said shaft forming means and a hub formation with an axial bore for receiving shaft mounting means which has a substantial axial dimension with opposite ends spaced an axial distance less than the corresponding dimension of said circumferential face,

said roller body having oppositely disposed end faces with a protruding rib formation projecting outboard of said end faces,

said roller body being formed of a material having substantial resiliency with said circumferential face having a series of circumferentially spaced axially extending, radially projecting rib formations for engaging the surface of the boat,

said hub formation having outwardly opening inner and outer recesses formed at opposite ends of said axial bore, said inner recesses having a diameter larger than the diameter of said axial bore and terminating at the inner most ends of said outer recesses which outer recesses extend with an outward and radial taper to said protruding rib formations on said oppositely disposed end faces with said protruding rib formations projecting outboard of said outer recesses,

shaft mounting means including a bearing forming means disposed in part in said axial bore and in part in said outwardly opening inner recesses with shaft contacting portions disposed in said bore and between said inner recesses so as to mount said roller body onto said shaft forming means for rotational movement relative thereto, and

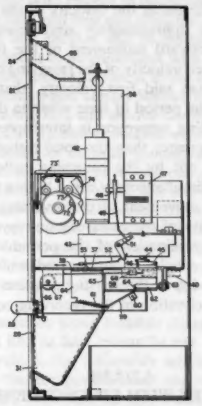
said bearing forming means includes a bushing seated in said bore which has a radially inwardly curved inner surface to provide a gimbal effect when mounted on said shaft forming means.

4,210,236
STAMP BOOK VENDING MACHINE

Fred J. Criscitelli, Hawthorne, N.J., assignor to United States Postage Corporation, Wayne, N.J.

Filed Feb. 22, 1978, Ser. No. 880,715
Int. Cl.[2] G07F 9/04
U.S. Cl. 194—1 D 9 Claims

1. In a machine for vending stamp books, means providing a vertical stack of horizontally disposed separate stamp books and disposing the bottom book of the stack in a space having a dimension longitudinally of the stack approximately equal to the thickness of one book, means providing a horizontally slidable stamp book ejector plate reciprocable in a plane aligned with and parallel to said bottom book, means for reciprocating said ejector plate to displace the bottom book out of the stack comprising an electric motor driven cam operably connected to said plate, coin controlled means for actuating said ejector plate comprising means whereby upon deposit of a coin or coins of predetermined value said motor will be actuated to operate said cam through a single complete cycle during which said plate moves through said space to eject the

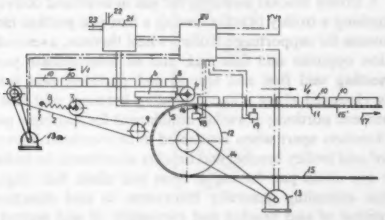


bottom book and then returns to initial position, said stack then lowering to dispose the lowermost book in said space, and a coin receiving compartment for accepting said deposit of a coin or coins sufficient to effect a cycle of operation of said motor cam and ejector plate, a movably mounted normally closed coin release door for said compartment, a coin collection box below said compartment, and means movable with said ejector plate and adapted for operative connection to said release door whereby book ejection movement of the slide plate opens said door to transfer coins from said compartment into said collection box.

4,210,237
SYSTEM FOR TRANSFERRING ARTICLES FROM A CONTINUOUSLY MOVING FEEDING CONVEYOR TO A RECEIVING CONVEYOR

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Aug. 28, 1978, Ser. No. 937,588
Claims priority, application Denmark, Sep. 1, 1977, 3892/77
Int. Cl.[2] B65G 47/31
U.S. Cl. 198—425 3 Claims



1. Method of transferring articles from a continuously moved feeding conveyor and to a receiving conveyor whereby a reversing roller device, positioned at the delivery end of the

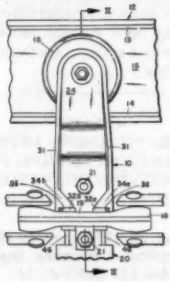
feeding conveyor, is reciprocable with respect to the receiving end of the receiving conveyor, and whereby the forward movement of the reversing roller device is carried out at a velocity which is at least as great as the velocity of the feeding conveyor in such a way that the delivery of articles from the feeding conveyor is interrupted during a period of time and whereby the velocity of the receiving conveyor is changeable, characterized by driving the receiving conveyor during a period of time with a first velocity adjusted in such a way with respect to the velocity of the feeding conveyor that the articles are delivered to the receiving conveyor with a predetermined mutual distance whereafter the velocity of the receiving conveyor is increased approximately simultaneously with the initiation of the forward movement of the reversing roller device, said increased velocity of the receiving conveyor being so much higher than said first velocity, that the receiving conveyor, during the period of time wherein delivery of articles from the feeding conveyor is interrupted, is moved a distance which is greater than the total distance of forward movement carried out by the reversing roller device, said increased velocity simultaneously being higher than the velocity of the forward movement of the reversing roller device; reducing the velocity of the receiving conveyor to said first velocity after the termination of the period of time during which delivery of articles is interrupted and returning the reversing roller device to the starting position of said device before the next acceleration of the receiving conveyor is carried out.

4,210,238

CHAIN BRACKET WITH STRENGTHENED CHAIN SUPPORTS

Charles C. Frost; Gerald W. Gurney, both of Ada, and Frederick R. Sytsma, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jan. 25, 1978, Ser. No. 872,245
Int. Cl.[2] B65G *17/30, 17/80*
U.S. Cl. 198—687 **34 Claims**



1. A trolley bracket assembly for use in overhead conveyors comprising a trolley bracket having a first end portion including means for supporting a trolley wheel thereon, a second end portion opposite said first end, and an intermediate portion connecting said first and second end portions, said bracket being elongaed along a line extending between said first and second end portions; a bracket attachment for spacing a pair of said brackets apart when assembled in an overhead conveyor; one of said trolley bracket and bracket attachment including at least one chain pad having at least one chain link engaging surface extending generally transverse to said direction of elongation of said bracket and outwardly of said second end portion on said bracket; the other of said trolley bracket and bracket attachment including reinforcement means extending into abutment with a portion of said chain pad opposite to said chain link engaging surface for supporting said chain pad and preventing its movement under load; and means for securing said bracket attachment to said bracket.

4,210,239

FOLDABLE NEEDLE PACK

Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Company Ltd., Hiroshima, Japan

Filed Oct. 2, 1978, Ser. No. 947,947
Claims priority, application Japan, Mar. 23, 1978, 53-37828[U]
Int. Cl.[3] B65D *85/24*
U.S. Cl. 206—45.13 **3 Claims**

1. A foldable needle pack comprising:
(a) a substantially rectangular shaped base member, which is creased or scored so as to present a fold line which serves as a hinge, said base member comprising a first base portion and a second base portion bordered by said fold line,
(b) a needle holder portion through which a plurality of needles can be received mounted near said fold line on said second base portion, and
(c) two closely aligned rigid transparent cover members, each formed as a hollow shell presenting an open side towards the base members, both said hollow shells presenting another open side towards each other, wherein one hollow shell is, at the end edge thereof opposite its open side, attached to said first base portion such that it normally contacts resiliently, at its peripheral edge facing said base member, with said first base portion while the other hollow shell is at the peripheral edge attached on said second base portion, said cover member attached to said first base portion being of a length whereby, when said first base portion is bent back along said fold line relative to said second base portion in such a manner that the angle between the surfaces of said base members on which said cover members are mounted increases, the top of each of the needles kept in the second cover member slides on the inner surface of said first cover member and then a free end edge of said first cover member comes into friction contact with the side of said needles thereby to hold the needle pack in a V-shape, and whereby the pack is returnable from its frictionally held V-shape to a closed position by applying a small force to the end edge of said first base portion while holding the end edge of the second base portion.

4,210,240

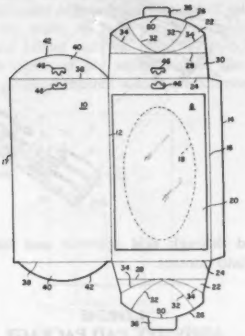
TWO-WALLED CARTON

Phillip J. Fricano, Hamburg, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 12, 1979, Ser. No. 11,715
Int. Cl.[2] B65D *5/42, 25/00*
U.S. Cl. 206—45.31 **12 Claims**

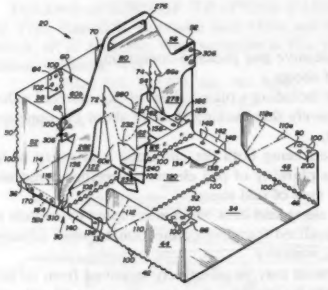
1. A hollow two-walled carton of substantially elliptical cross section defining an enclosure for an article comprising:
a front wall and an opposed rear wall; and an end flap having a first portion thereof hinged to one of the front and rear walls along an end flap hinge line spaced from and parallel to the end of the one wall, the first end flap portion having an arcuate end surface and end flap fold lines extending

outwardly from the center of the end flap hinge line to spaced locations on said arcuate end surface to facilitate folding the first end flap portion so that a part thereof



extending between the arcuate end surface and outermost end flap fold lines extends substantially at right angles from the one wall toward the other wall with the arcuate end surface in substantial engagement with the other wall.

4,210,241
COLLAPSIBLE ARTICLE CARRIER
Paul J. Morcom, Rte. 3, P.O. Box 224-17B, Troup, Tex. 75789
Filed Jul. 10, 1978, Ser. No. 923,392
Int. Cl.[2] B65D *5/36, 5/46, 5/48*
U.S. Cl. 206—172 **27 Claims**



1. A collapsible article carrier formed from a folded sheet of material and being alternatively foldable into a substantially flat collapsed position and an open position for receiving articles comprising:

a unitary bottom member having first and second bottom panels, said first and second bottom panels being hingedly joined along a central horizontal fold line;

first and second side walls parallel to one another and being hingedly joined along bottom edges thereof to edges of said first and second bottom panels opposite said central horizontal fold line of said unitary bottom member, such that said first and second side walls extend perpendicularly to said unitary bottom member when the collapsible article carrier is in the open position;

first and second end panels parallel to one another when the collapsible article carrier is in the open position, said first and second end panels being hingedly joined to opposite edges of said first side wall to extend perpendicularly to said first side wall when the collapsible article carrier is in the open position;

third and fourth end panels parallel to one another when the collapsible article carrier is in the open position, said third and fourth end panels being hingedly joined to opposite edges of said second side wall to extend perpendicularly to said second side wall and parallel to said first and second end panels when the collapsible article carrier is in the open position;

said first and third end panels being hingedly joined to form a first end wall;

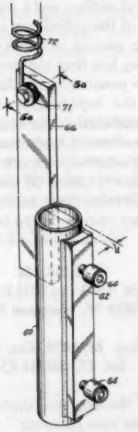
said second and fourth end panels being hingedly joined to form a second end wall;

each of said end panels including a fold line having a predetermined angle with respect to the bottom edge of said end panels to permit said first and third end panels to lie coincident with one another and to permit said second and fourth end panels to lie coincident with one another when the collapsible article carrier is in the collapsed position;

means for attaching said unitary bottom member to said end panels including first and second tab means formed from first and second cutouts contained within said first bottom panel and means for hingedly joining said first and second tab means to said first and second end panels for securing said first bottom panel to said first and second end panels, and third and fourth tab means formed from third and fourth cutouts contained within said second bottom panel and means for hingedly joining said third and fourth tab means to said third and fourth end panels for securing said second bottom panel to said third and fourth end panels; and

said bottom member being foldable along said central horizontal fold line to fold upwardly and inwardly between said side walls in the collapsible article carrier collapsed position to thereby permit either one of said end walls to fold inwardly between said side walls, to thereby permit said side walls to lie coincident with one another in the collapsible article carrier collapsed position, such that the collapsible article carrier may be folded about said hinged panels and walls to a substantially flat collapsed position and folded to the open position for receiving articles.

4,210,242
REPAIR KIT
James Mullen, 106 Edgewood Ave., Greenbrook, N.J. 08812
Filed May 21, 1979, Ser. No. 40,681
Int. Cl.[2] B25G *3/00;* **F16D** *1/00;* **F16G** *11/00*
U.S. Cl. 206—231 **11 Claims**



1. A repair kit for a broken rake arm in an automatic bowling pin setting machine, said repair kit comprising:

a. elongated rigid sleeve means having an internal dimension slightly larger than the comparable external dimension of the rake arm to thereby permit said sleeve means to be

slidably positioned over the broken portion of the rake arm;

b. at least one fastener threaded through the wall of said sleeve means and arranged to grippingly bear against the outside surface of the rake arm; and

c. rigid strap means secured to said sleeve means in a plane that is parallel to and laterally offset from the central axis of said sleeve means with one end of said strap means extending past at least one of the ends of said sleeve means, said strap means being provided with a hole at at least one end thereof.

4,210,243

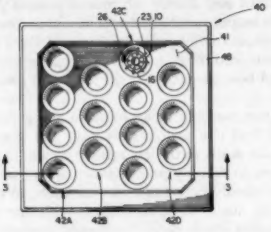
TRAY FOR HOLDING COMPONENTS WITH PREFORMED LEADS

Jeffrey B. McDowell, Rio Rancho, N. Mex., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 26, 1978, Ser. No. 972,751

Int. Cl.[2] B65D *73/02*

U.S. Cl. 206—332 **3 Claims**



1. A storage tray in combination with electrical component packages, each package including a cylindrical can type case having a plurality of preformed leads flared radially outward from the bottom of the case with flat portions on free ends of the leads being in a common plane, said storage tray comprising: a relatively flat top member having a plurality of funnel shaped openings formed in the top surface thereof, the lower portion of each opening being a cylindrically shaped hole with a flat bottom support surface and a diameter somewhat greater than the diameter of the cylindrical can portion of a package located therein, the spacing between the top of a case and the common plane being less than the spacing between the bottom and top surfaces for positioning the flat portions of leads below the top surface, the top portion of each opening being smoothly tapered outward in the direction of the top surface and receiving the preformed leads, surfaces of said top member and openings being relatively smooth and hard for preventing the free ends of leads catching on them, at least some of said openings having said component packages located therein with the tops of said cases resting on the bottom surfaces.

4,210,244

CARRIER AND HANDLE THEREFOR

Dale R. Westrick, 9041 W. Herbison Rd., Grand Ledge, Mich. 48837

Filed Aug. 23, 1978, Ser. No. 935,892

Int. Cl.[2] B65D *85/54*

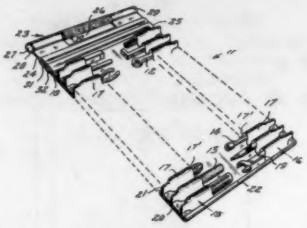
U.S. Cl. 206—373 **4 Claims**

1. In a carrier or the like, the combination comprising:

a resilient elongate base element;

a handle tab secured to said base element intermediate the ends thereof and projecting from said base intermediate the edges of said base, said tab including a grip surface; and

a handle receiving aperture defined at one end of said base element and including a rigid end edge of said base element and said handle aperture having a grip surface impinging said grip surface of said handle tab when said tab



is passed through said aperture and said surfaces are pressed into contact.

4,210,245

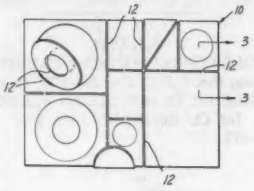
ADHESIVE PAD PACKAGE

George W. Dodge, 3902 Clay St., San Francisco, Calif. 94118

Filed Mar. 12, 1979, Ser. No. 19,875

Int. Cl.[2] B65D *73/00, 85/62;* **A61F** *5/30*

U.S. Cl. 206—440 **6 Claims**



1. An adhesive pad package comprising:

a pair of sheets,

said pair including a planar sheet of pad material adhered to a relatively thin backing sheet of about the same area and extent,

said sheets being both die cut along a plurality of lines to form a plurality of pad elements together composing the entire area of said sheets,

the cuts along said lines being interrupted to provide at least one localized frangible connection between adjacent elements, whereby

each element may be selectively removed from its adjacent elements by breaking its connection to said adjacent elements.

4,210,246

RECLOSABLE HINGED BLISTER CARD PACKAGE

Morris W. Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Nov. 8, 1978, Ser. No. 958,716

Int. Cl.[2] B65D *83/00, 85/14*

U.S. Cl. 206—461 **12 Claims**

1. A reclosable hinged blister card package, comprising:

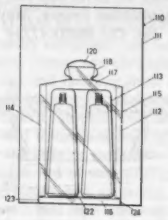
(a) a paperboard card having a front surface and a back surface, bottom, top and side edges, and an internal edge defining an opening in said card;

(b) a plastic blister having a raised product holding portion having bottom and side edges, and a peripheral flange at the sides and bottom of said product holding portion, said peripheral flange being adhered to the front surface of said card;

(c) opening tab means on said plastic blister and extending over at least a portion of said opening in said card and adapted to be pushed through said opening when said

blister is reclosed for locking said blister in its reclosed position;

(d) cut score lines in the front surface of said card and extending partially through the thickness of said card along the inner and outer edges of the portions of said peripheral flange at the sides of said product holding portion, whereby said blister may be lifted by said opening tab means with confined ply separation of the paperboard card at the portions thereof which are adhered to the side



portions of said peripheral flange without breaking the bond between said flange and the front surface of said paperboard card; and

(e) a hinge line in said card formed along the bottom edge of said product holding portion and extending to the outside edges of said peripheral flange, and cuts formed in said card extending along the outside edges of said side peripheral flange portions from the bottom edge of said card to the ends of said hinge line, whereby said plastic blister can be swung open about said hinge line.

4,210,247

FOLDED SHEETS OF WRAPPING PAPER

Dana E. Frye; Russell G. Novcaski; Jack Mills, and Richard H. Horneck, all of Appleton, Wis., assignors to Fox Valley Corporation, Appleton, Wis.

Filed Feb. 5, 1979, Ser. No. 9,647
Int. Cl.² B65D *85/62*
U.S. Cl. 206—494 **1 Claim**

1. A nest of folds of decorative wrapping paper with each fold including at least one sheet of paper,

a first fold being creased longitudinally into a flat V-shaped configuration having two panels of approximately equal width,

a second fold being creased longitudinally into a flat Z-shaped configuration having three panels, which three panels include a center panel having the same width as a panel of said first fold and two side panels, one of which is one-third and the other of which is two-thirds as wide as the center panel,

a third fold being creased in the same configuration as the second fold,

said nest being assembled with the center panels of the folds superimposed upon one another, the two-thirds width side panels being positioned immediately outwardly of the center panels on opposite sides of the nest, and the one-third width side panels positioned immediately outward of the two-thirds width side panels on opposite sides of the nest, and

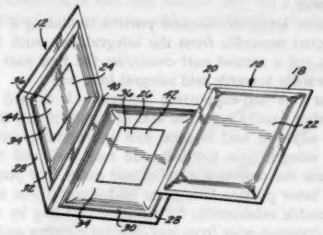
the assembled folds of the nest being folded in half longitudinally about a laterally extending crease line to form a folded nest in which the outer face on each side presents a shingled appearance in which one-third of each fold is visible.

4,210,248

PACKAGING FOR RETORTABLE POUCH

Arnold B. Engdahl, Jr., 15282 Moulins Clr., Irvine, Calif. 92714

Filed Dec. 11, 1978, Ser. No. 968,494
Int. Cl.² B65D *85/54*
U.S. Cl. 206—525 **13 Claims**



1. A compound package for food products comprising:

a sealed enclosure of substantially flat overall appearance having a portion wherein the food products are contained and a peripheral edge which is substantially narrower in cross section than the food products containing portion, and

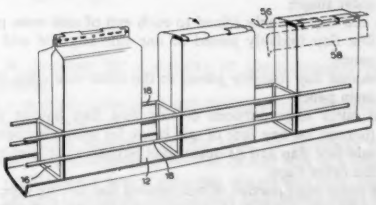
a container for accommodating the enclosure and configured to define a cavity of substantially the same size as said food containing portion and to be in contact with a substantial portion of the outer surface of the enclosure, and for fully surrounding at least the food products containing portion of the enclosure, the container having at least two substantially flat portions dimensioned to be superimposed in close proximity relative to one another, the flat portions being configured to accommodate between one another and to be in contact with the peripheral edge of the enclosure whereby the enclosure is held in position within the container and whereby the enclosure lends structural support to the container against a crushing force, and the like and whereby the container protects the enclosure from being damaged by a sharp object and the like.

4,210,249

RECLOSABLE BAG CLOSURE SYSTEM

Gordon W. Holmes, Mississauga, Canada, assignor to Professional Packaging Limited, Mississauga, Canada

Filed Mar. 8, 1976, Ser. No. 664,906
Claims priority, application United Kingdom, Mar. 11, 1975, 10177/75
Int. Cl.² B65D *17/06*
U.S. Cl. 206—632 **8 Claims**



1. A closed, openable and reclosable bag structure having:

a generally rectangular base,

generally rectangular front and rear walls upstanding from and integral with said base,

generally rectangular side walls upstanding from said base and integral with said front and rear walls and said base, and

a top closure including

an outer face portion integral with said rear wall and said side walls, said outer face portion being located parallel to and dimensioned substantially the same as said base,

an inner integrally-formed portion integral with said front wall and said side walls and underlying said outer face portion,

said inner integrally-formed portion including a first part directed inwardly from the integral join with the front wall and a second part overlying the first part directed outwardly towards said integral join, and

at least one self-supporting generally U-shaped channel member fixedly joined to said first part of said inner portion adjacent said integral join and opening away from said integral join towards said rear wall and receiving therein the common edge of said outer face portion and said inner portion located at said integral join in sliding releasable relationship for opening said bag by releasing said common edge from said channel member and separating said outer and inner portions without destroying the integrity of the bag structure and for closing said bag by sliding fit of said common edge in said channel member,

said channel member including an elongate body member fixedly joined to said first part of said inner portion and at least one projection integrally joined to said body member and extending away from said integral join over said body member a short distance and in spaced relationship therewith,

said body member having at least one orifice extending therethrough.

4,210,250

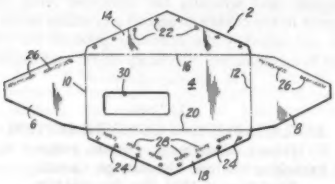
REVERSIBLE ENVELOPE

Robert S. Yale, 1660 Avon Pl. NW., Washington, D.C. 20007

Filed Mar. 9, 1979, Ser. No. 19,155

Int. Cl.[2] B65D *27/06, 27/32*

U.S. Cl. 206—632 **7 Claims**



1. A blank for forming a reversible and returnable envelope comprising:

a sheet of material defining a main panel of generally rectangular shape;

an end flap foldably joined to each end of said main panel;

a first flap foldably joined to one side edge of said main panel;

a second flap foldably joined to the other side edge of said main panel;

the outer edge portions of said first flap having means thereon, on one face of said blank for releasably securing said first flap and its outer edge portion to at least one of the other flaps;

the outer edge portion of said second flap having selectably usable means thereon, positioned adjacent each other on said one face of said blank for securing said second flap to at least one of said other flaps at least one of said selectively usable means being readily releasable for releasably securing said second flap and its outer edge portion to said one of said outer flaps; and

said end flaps being provided with moisture activatable adhesive means on said one face of said blank.

4,210,251

ONE PIECE MOLDED SCREW-TYPE BOTTLE CAP

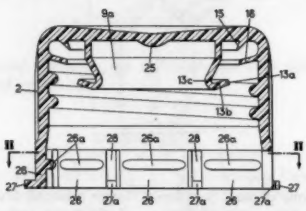
Jean Grussen, "La Noue" Mondreville 78114, Longnes, France

Filed May 16, 1978, Ser. No. 906,668

Claims priority, application France, May 20, 1977, 77 15581

Int. Cl.[2] B65D *41/34*

U.S. Cl. 215—329 **5 Claims**



1. In a screw-type bottle cap molded in one piece from plastic material and comprising

an internal sealing skirt depending from the top of said cap and adapted to be force-fitted into the externally threaded neck of a bottle,

the improvement according to which said sealing skirt comprises a first substantially cylindrical portion adapted to engage in sealing contact with the internal surface of said neck,

said first portion merging into a central inwardly flared portion terminating in an outwardly extending collar bent prior to applying the cap on the bottle neck from an initially downwardly extending position into an upwardly extending position in which the peripheral portion of said collar is such a distance from the top of the cap that it penetrates inside the bottle neck only after an internal thread of the cap engages with the external thread of the bottle neck and the cap is screwed, said peripheral portion forming an additional seal with the inner surface of said bottle neck as the cap is screwed down.

4,210,252

ANGLEWORM STORAGE BOX

John P. Cooke, Minneapolis, and Walter Rohrbach, Burnsville, both of Minn., assignors to Inventors Products, Inc., Chaska, Minn.

Continuation of Ser. No. 810,931, Jun. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,445

Int. Cl.[2] B65D *7/00, 21/02*

U.S. Cl. 220—4 F **1 Claim**

1. An angleworm storage box consisting of a closed imperforate container and comprised of:

(a) a planar integrally formed rectangular skeleton top frame having a central unobstructed major opening and a horizontal panel strip with outer peripheral edge portions and a vertically extending flange depending from said outer edge portions at each of its sides and ends;

(b) said panel strip surrounding said central opening;

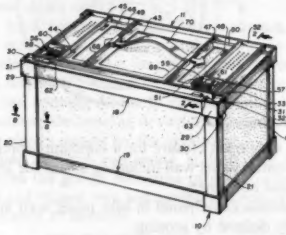
(c) a planar integrally formed rectangular skeleton bottom frame having the same critical dimensions as said top frame and having a central unobstructed major opening and a horizontal bottom panel strip with outer peripheral edge portions and a flange extending upwardly from said outer edge portions at each of its sides and ends;

(d) each of said horizontal panel strips having corner portions with vertically extending latch apertures extending

therethrough, at least some of the aperture-defining portions of said panel strips being comprised of elastic material;

(e) a plurality of separate non-tubular corner strut members, one each of which extends between each pair of corresponding corners of said top and bottom frames, each of said strut members being generally angular in cross-section and comprising a pair of elongated legs extending substantially normal to each other, each of said legs having interior surfaces facing toward each other and having latch elements at each of its opposite ends extending longitudinally outwardly therefrom into said latch apertures of its said associated corner and through its respective horizontal panel strip and latching itself thereto to comprise therewith a rigid rectangular skeleton box framework;

(f) substantially imperforate side, end, top and bottom panels separate from said frames and said strut members carried snugly against the interior surfaces of said elongated legs of said framework and of said strut members and readily removable therefrom and covering said openings and extending between said strut members and said frames and comprising therewith a closed generally rectangular box adapted to receive and retain earthworms therewithin;



(g) a cover member secured to said top frame and closing said central opening;

(h) said cover member having an elongated rib depending from its under surface and defining a generally rectangular configuration conforming to said central opening and extending downwardly thereinto;

(i) securing means carried by said rib and extending outwardly therefrom beneath said horizontal panel strip at one side of said framework to secure said cover at one of its sides thereto for relative pivotal movement;

(j) said cover member also having upstanding rib structure extending upwardly from the upper surface thereof and having openings therein defining a latch keeper;

(k) a latch member slidably mounted within said latch keeper and constructed and arranged to latchably engage the underside of the opposite horizontal panel strip of said upper frame to secure said cover member in closed position; and

(l) said latch member including a flexibly mounted latch-securing tongue constructed and arranged to extend through said latch keeper and engage the same in a plurality of positions to alternatively hold said latch member in cover-securing and cover-releasing positions as desired.

4,210,253

PACKING CONTAINER FOR ELONGATED OBJECTS

Peter Rösler, Thumen 110, D 8995 Sigmarszell, Fed. Rep. of Germany

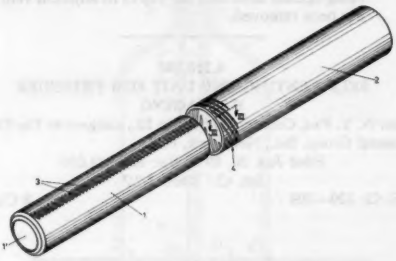
Filed May 18, 1979, Ser. No. 40,474

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 7815027[U]

Int. Cl.² B65D *11/02, 85/54*

U.S. Cl. 220—8 **10 Claims**

1. Elongated packing container comprising a first and second cylindrically shaped axially elongated hollow body each having a closed end and an open end with the open end of said first hollow body telescopically insertable into the open end of and being coaxial with said second hollow body, said second hollow body being capable of telescopically receiving at least a part of the axial length of said first hollow body, said first hollow body has a row of teeth with the row extending for substantially the full axial length of said first hollow body and being parallel with the longitudinal axis thereof, said teeth extending outwardly from the outer surface of said first hollow body, each of said teeth extending substantially transversely of the axial direction of said first hollow body and in the circumferential direction of said first hollow body for a small angular extent thereof, and means on said second hollow body adjacent



the open end thereof for engagement with said teeth on said second hollow body, wherein the improvement comprises that said teeth are disposed at an oblique angle to the longitudinal axis of said first hollow body, said means on said second hollow body comprises an annular portion of individual threads having a short axial length relative to the length of said row of teeth and to the axial length of said second hollow body, said threads being inclined to the longitudinal axis of said second hollow body at substantially the same angle as said teeth form with the longitudinal axis of said first hollow body, and said threads extending inwardly from the inner surface of said second hollow body.

4,210,254

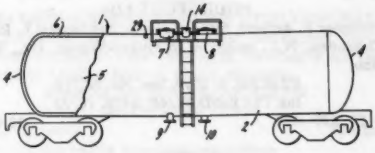
RAILROAD TANK CAR

James D. Parsons, Munster, and Paul S. Wike, Hammond, both of Ind., assignors to Union Tank Car Company, Lincolnshire, Ill.

Filed Aug. 10, 1978, Ser. No. 932,817

Int. Cl.² B65D *77/06, 87/32, 51/16*

U.S. Cl. 220—22 **9 Claims**



1. A container for a plurality of non-compatible liquids, comprising:

A. a generally cylindrical tank having a generally horizontal longitudinal axis;

B. a flexible diaphragm in said tank, the periphery of said diaphragm contacting the wall of said tank in a generally vertical plane which generally bisects said tank, said diaphragm alternately lying against opposite portions of said tank so as to define different chambers for such non-compatible liquids;

C. means for sealing said diaphragm against said wall; and

D. means for filling said chambers with liquid, comprising:

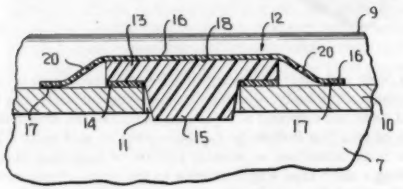
1. a pair of liquid inlet conduits extending upwardly from the upper portion of said tank, said inlet conduits being located on opposite sides of said plane, and each inlet conduit communicating with a chamber inside of said tank on a different side of said diaphragm;
2. a movable lid closing each of said inlet conduits; and
3. means for automatically venting both of said conduits to the atmosphere whenever either of said conduits is opened comprising a vent pipe adjacent each inlet conduit, a line connecting each vent pipe with the inside of the inlet conduit on the opposite side of said diaphragm, a removable cap closing each vent pipe, and means for preventing the movable lid of either inlet conduit from being opened until after the cap of its adjacent vent pipe has been removed.

4,210,255

SELF-VENTING END UNIT FOR PRESSURE PACKAGING

Peter N. Y. Pan, Country Club Hills, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 30, 1978, Ser. No. 921,037
Int. Cl.³ B60L *1/02*
U.S. Cl. 220—209 **8 Claims**



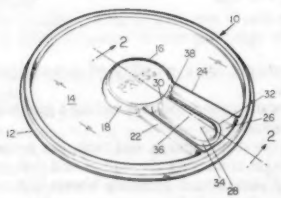
1. A venting container component comprising a container wall having a vent opening therethrough, a closure seated on said container wall and normally closing said vent opening, said closure projecting above said container wall, and an elastic retainer means extending from said closure remote from said container to said container wall in a state holding said closure seated on said container wall only under predetermined limited positive internal pressure conditions, said elastic retainer means having elasticity properties and a memory sufficient to reseat said closure on said container wall at container internal pressures less than said predetermined pressure.

4,210,256

POUR SPOUT LID

Christopher P. Amberg, Sylvania, Ohio, and Samuel L. Belcher, Clementon, N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 9, 1979, Ser. No. 55,719
Int. Cl.² B65D *41/48*; A47K *19/22*
U.S. Cl. 220—254 **12 Claims**



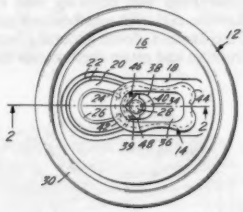
1. A closure with a rim adapted to engage the top of a container comprising:
a generally planar central area attached to said rim,
a centrally positioned load applying area connected to said planar central area and positioned at an elevation different than said central area,
a plurality of ribs connecting said load applying area to said rim,
a valve positioned between said ribs and attached in cantilevered fashion to said load applying area whereby said valve can be opened when pressure is applied to said load applying area.

4,210,257

FRACTURE AND TEAR-RESISTANT RETAINED TAB

Charles S. Radtke, Little Ferry, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Jun. 21, 1979, Ser. No. 50,647
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **9 Claims**



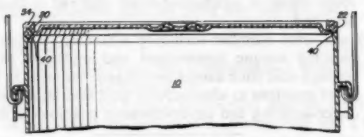
1. An easy open closure for a container comprising:
(a) a central panel wall including means for joining said wall to said container;
(b) a displaceable panel in said panel wall at least substantially defined by scoring;
(c) a lever tab with a nose end and a lift end and a central web disposed therebetween, said web being lanced to form a tongue with the root of said tongue proximate said tab nose and the tip of the tongue disposed toward said lift end and wherein said tongue is coined to impart bendability thereto; and
(d) means for joining said tongue to said end wall.

4,210,258

SEAL FOR PLASTIC BUCKETS AND CANS

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60603

Continuation-in-part of Ser. No. 882,883, Mar. 2, 1978, abandoned. This application Nov. 27, 1978, Ser. No. 963,736
Int. Cl.² B65D *55/16, 41/18, 43/10*
U.S. Cl. 220—306 **19 Claims**



1. A plastic bucket lid adapted for removable attachment adjacent its periphery to a bucket, said lid defining first and second annular walls forming an annular, open depression adjacent its periphery, said second annular wall defining the outer limit of said depression and the first annular wall defining the inner limit of said depression, said lid also defining a third annular wall, positioned outwardly from said second wall, said second and third annular walls, in turn, defining an annular locking slot for receiving and holding the lip of a bucket, the improvement comprising, in combination:
radially positioned reinforcing fins carried by said lid within

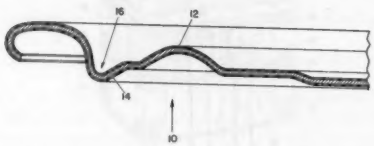
the annular, open depression, to restrict the flexing of said second wall, said fins extending in contact with a greater portion of the height of the second wall than the first wall.

4,210,259

BARRIER COATED METALLIC CONTAINER WALL AND SHEET

H. Dale Schrecker, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 8, 1978, Ser. No. 913,938
Int. Cl.[2] B65D *7/04*
U.S. Cl. 220—455 **5 Claims**



1. In a container having a metal end wall attached to the container body by a seam and severable therefrom by a mechanical can opening device, said end wall comprising:

a formed metal sheet; and

a protective, hard, abrasion resistant barrier coating, including a hard thermosetting epoxy resin and 20 up to 30% by weight particulate additive, on the exterior of said container end wall in the region where the end is to be severed by a can opening device to reduce friction between the end wall and the opening device to substantially eliminate metal slivers caused by the severance;

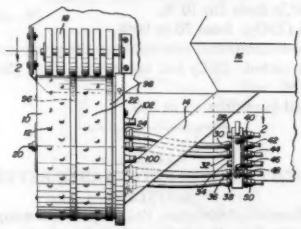
said particulate additive containing at least one material selected from the group consisting of polyethylene, synthetic wax and natural wax and having an average particle size of less than 20 microns.

4,210,260

SKIP ROW ATTACHMENT FOR PLANTER

Wondall R. Luttrell, P.O. Box 504, Clarendon, Tex. 79226

Filed Jul. 7, 1978, Ser. No. 923,256
Int. Cl.[2] B65G *29/00*; A01C *7/04*
U.S. Cl. 221—278 **11 Claims**



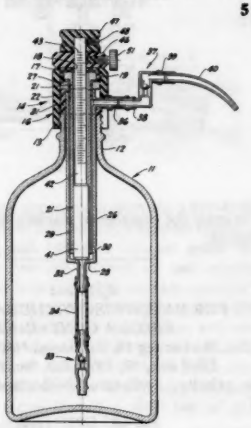
1. In a planter for planting of seeds in a plurality of planting rows, the improvement comprising an attachment having directing means for directing seed alternatingly into planted rows and away from skipped rows, said seed planter having a common seed storage receptacle, wherein said planter is of the rotating air pressurized drum type and has a plurality of seed tube connectors for discharge of seed into corresponding seed tubes leading to said planting rows, and wherein said directing means is interposed between sections of said seed tubes, whereby a strip can be planted to the end of a field, the planter reversed in its direction of travel to plant an adjacent strip, said directing means being pneumatically or hydraulically activated, and the planter can continue planting the adjacent strip with uniform spacing between planted rows of both strips.

4,210,261

CONTROLLABLE LIQUID DISPENSER

John J. Trujillo, Castro Valley, and Timothy E. Brown, Danville, both of Calif., assignors to LST Electronics, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 834,571, Sep. 19, 1977. This application Jun. 12, 1978, Ser. No. 885,655
Int. Cl.[2] B67D *5/22*
U.S. Cl. 222—43 **5 Claims**



1. A controllable dispenser of liquids comprising

a cap adapted to engage the open top of a container,

a pair of radially spaced concentric cylinders depending from said cap with the inner cylinder having open ends and the outer cylinder having an inlet valve depending from the bottom thereof and an outlet valve adjacent the top thereof,

a pump plunger slidably disposed within said inner cylinder for movement longitudinally thereof to pump fluid and having a graduated gauge rod extending upwardly therefrom through said cap,

means in said cap limiting maximum upward movement of said pump plunger, and

a collar adjustably engaging said gauge rod above said cap for precise setting of the maximum pump plunger movement for each stroke to control the volume of liquid displaced by each plunger stroke.

4,210,262

LIQUID DISPENSING APPARATUS WITH VENT VALVE

Peter Donaldson, 43 Hawthorne Way, Storrington, Sussex, England, assignor to Peter Donaldson, Storrington and David W. Moute, London, both of, United Kingdom

Filed Jul. 10, 1978, Ser. No. 923,479
Int. Cl.[2] G01F *11/32*
U.S. Cl. 222—442 **12 Claims**

1. Liquid dispensing apparatus comprising:

(a) a measuring chamber,

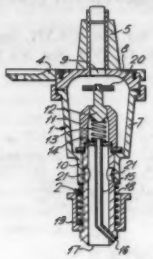
(b) an inlet port provided in said measuring chamber permitting liquid to enter the measuring chamber,

(c) an outlet port provided in said measuring chamber permitting liquid to leave the measuring chamber,

(d) a valve member disposed in said measuring chamber closing said inlet port on actuation thereof and opening said outlet port, said valve member being generally tubular and having at least one lateral aperture opening into said measuring chamber on actuation of the valve member such that liquid passes through said aperture and thence through the outlet port, and

(e) an air valve disposed in said valve member at its end in

the chamber opening on actuation of the valve member into an upper region of the measuring chamber permitting



air to enter the chamber to displace liquid as it leaves the chamber.

4,210,263

VALVE FOR BATCHWISE WITHDRAWING LIQUID FROM A CONTAINER

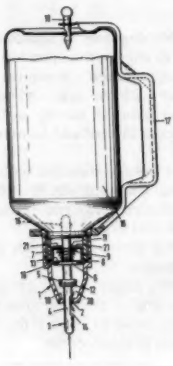
Willem Bos, Berkenweg 18, Zuidlaren, Netherlands

Filed Jun. 13, 1978, Ser. No. 915,155

Claims priority, application Netherlands, Jun. 14, 1977, 7706535

Int. Cl.[2] G01F *11/38*

U.S. Cl. 222—449 **5 Claims**



5. A container having a neck with an axial opening therethrough in the lower part thereof, and a valve for discharging liquid therefrom,

said container neck having a lower rim, and having screwthreads thereon,

a guide member having a cylindrical portion in and in engagement with the interior of said neck, a transverse portion within said neck, and an outwardly extending flange in engagement with said rim,

said transverse portion having a central aperture and a perforation,

a cap screwthreaded on said neck and having means thereon for clamping the outer portion of said flange against said rim, said cap having a lower outlet in alignment with said central aperture,

an axially movable valve unit comprising a valve stem and a pair of spaced, outwardly extending upper and lower collars thereon, said valve stem extending in said central aperture and said outlet,

said lower collar engageable with said cap around said outlet to seat thereon, and

said upper collar engageable with the inner portion of said flange to seat thereon.

4,210,264

IMMERSION NOZZLE FOR CONTINUOUS CASTING OF MOLTEN STEEL

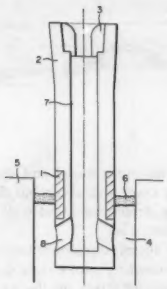
Masanao Kondo, Gifu, Japan, assignor to Akechi Taikarenga Kabushiki Kaisha, Gifu, Japan

Filed Apr. 18, 1979, Ser. No. 31,063

Claims priority, application Japan, Apr. 26, 1978, 53-50330

Int. Cl.[2] B22D *11/10*

U.S. Cl. 222—591 **1 Claim**



1. An immersion nozzle for continuous casting of molten steel, which comprises:

a nozzle body comprising an alumina-graphite refractory and a refractory layer excellent in erosion resistance against a molten mold powder, said refractory layer being arranged so as to be integral with said nozzle body and flush with the outer surface of said nozzle body at the outside portion of said nozzle body in contact, when the lower portion of said immersion nozzle is being immersed into molten steel in a mold, with a molten mold powder layer on the meniscus of said molten steel;

said immersion nozzle being characterized in that:

said refractory layer arranged at said outside portion of said nozzle body

consists essentially of, in weight percentage:

Carbon (C): from 2to 10 %,

Zirconia (ZrO_2): from 70 to 90%,

At least one compound selected from the group consisting of silicon carbide (SiC) and amorphous silica (SiO_2): from 5to 27 %, and,

Incidential impurities up to 3%.

4,210,265

MOLDED CASE FOR RETURNABLE BEVERAGE BOTTLES

Rudolf F. Steinlein, Münichen, Fed. Rep. of Germany, assignor to Alexander Schoeller & Co. AG, Switzerland

Filed Mar. 27, 1979, Ser. No. 24,477

Claims priority, application Canada, Oct. 31, 1978, 315579

Int. Cl.[2] A47G *23/06*; B65D *1/24, 7/42*

U.S. Cl. 224—48 A **6 Claims**

1. An integrally molded thermoplastic resin case for transporting beverage bottles, said case being of the type including:

a pair of parallel, spaced side walls;

a pair of parallel, spaced end walls perpendicular to said side walls and joined across the ends of said side walls;

a floor lattice of support ribs joining the bottom edges of said side and end walls to form a rectangular box-shaped case, and

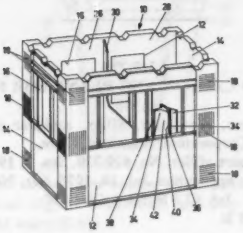
at least one facing, adjacent pair of separator pillars extending vertically from said floor lattice and having a slot therebetween for receiving therein a dividing wall of a

bottle carrier to be inserted into said case together with bottles contained therein,

wherein the improvement comprises that:

said pillars are open on their facing sides and have at least one cylindrically concave bottle contact face;

at least one longitudinal reinforcement rib is disposed substantially along the center line region of the inside surface of said pillar opposite said contact face;



a short web of material fills the gap between the facing edges of said pillars in said slot on each side of said slot adjoining said floor lattice, and

said pillars are anchored to said floor lattice by anchoring points which include at least points located on the outside of said pillars directly opposite said inner reinforcement ribs.

4,210,266

DEVICE FOR EJECTING A LOOP OF LEADER TAPE FROM A MAGNETIC TAPE CASSETTE

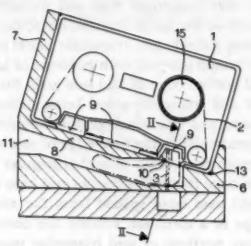
Klaus Schoettle, Heidelberg; Peter Dobler, Ludwigshafen; Lothar Gliniorz, Frankenthal; Dieter Gaiser, Rheinau-Dierscheim, and Helmut Lewin, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,094

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719460

Int. Cl.² B65H *17/32, 17/42*

U.S. Cl. 226—97 **5 Claims**



1. A device for ejecting a portion of the leader tape from a magnetic tape cassette to form a loop, said cassette having a front wall with openings through one of which said leader is ejected, said device comprising:

a relatively stationary holder for said cassette, and, carried by said holder, at least one nozzle which, as the cassette is placed on the holder, projects from the side of said holder facing said front wall, into said cassette through one of said openings and laterally of, and to a point past, said leader so that, upon connection of said nozzle to a pressurized source of gas, said leader is ejected from said cassette.

4,210,267

REAR-LOADING POWDER-ACETUATED TOOL

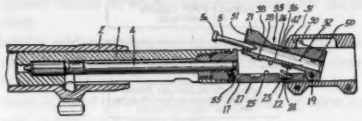
Marc Combette, and Jean Ollivier, both of Valence, France, assignors to Societe de Prospection et d'Inventions Techniques, S.P.I.T., Bourg-les-Valence, France

Filed Sep. 18, 1978, Ser. No. 943,021

Claims priority, application France, Nov. 23, 1977, 77 35264

Int. Cl.² B25C *1/14*

U.S. Cl. 227—10 **2 Claims**



1. A fastener driving apparatus comprising a barrel-holder, a barrel slidably carried in said holder, a support fixedly carried on a distal end of said barrel, a fastener guide pivotally mounted, proximate one end thereof, on said support, said guide being pivotable between a first position concentric with said barrel and a second position eccentric with said barrel, sleeve means, slidably carried on said support and moveable, relative to said guide, along the barrel axis, said sleeve coacting with said guide to displace the latter from one to the other of said positions pursuant to an axial displacement of the former, and spring means biasing a distal end of said guide away from the barrel axis.

4,210,268

ROTARY STAPLING MACHINE

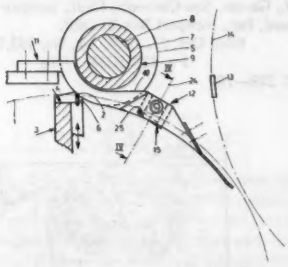
Emil Fischer, Lu-Oggersheim, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 39,010

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822136

Int. Cl.² B27F *7/12*

U.S. Cl. 227—81 **9 Claims**



1. In a stapling machine of the type including at least one rotatable stapling cylinder having a wire transport and a peripheral recess formed therein, a shaped disk disposed for cooperation with said cylinder which, for the formation of staples, has an outer periphery which projects into the peripheral recess, and a fixed staple guide which, relative to the rotational direction of the stapling cylinder, is positioned after the shaped disk and which projects into the peripheral recess and has a surface which is underrun by a back of a finished staple, the improvement comprising:

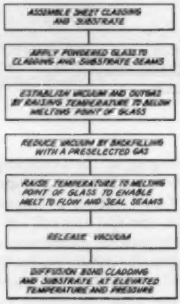
said staple guide having, in the area of its surface which is underrun by the back of the finished staple, a post-bending edge which projects deeper into the peripheral recess than does the outer periphery of said shaped disk.

4,210,269

METHOD FOR DIFFUSION BONDING SHEET CLADDINGS TO SUPERALLOY SUBSTRATES

William F. Schilling, Niskayuna, and Adrian M. Beltran, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1978, Ser. No. 913,842
Int. Cl.[2] B23K *19/00*
U.S. Cl. 228—193 **7 Claims**


ASSEMBLE SHEET CLADDING AND SUBSTRATE
APPLY POWDERED GLASS TO CLADDING AND SUBSTRATE SEAMS
ESTABLISH VACUUM AND OUTGAS BY RAISING TEMPERATURE TO BELOW MELTING POINT OF GLASS
REDUCE VACUUM BY BACKFILLING WITH A PRESELECTED GAS
RAISE TEMPERATURE TO MELTING POINT OF GLASS TO ENABLE MELT TO FLOW AND SEAL SEAMS
RELEASE VACUUM
DIFFUSION BOND CLADDING AND SUBSTRATE AT ELEVATED TEMPERATURE AND PRESSURE

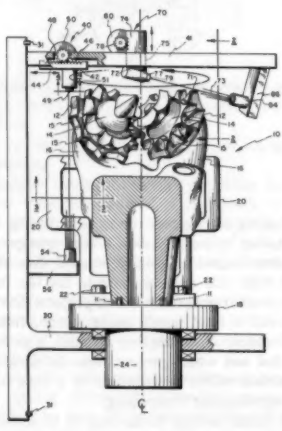
1. A method of applying a sheet cladding to a substrate comprising (a) assembling the sheet cladding to the substrate so that the cladding closely conforms to the substrate; (b) applying powdered glass to the seams of the cladding and the substrate; (c) establishing a vacuum at which the glass can be melted without decomposition; (d) melting the glass under said vacuum in the presence of a gas which is dissolvable in the cladding or substrate to enable at least a portion of the melted glass to seal the seams between the cladding and the substrate; and (e) diffusion bonding the sheet cladding and substrate at elevated temperature and pressure.

4,210,270

ELECTRONIC MONITORING OF ROCK BIT PARAMETERS

Lloyd L. Garner, San Clemente, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Oct. 23, 1978, Ser. No. 953,738
Int. Cl.[2] B23K *37/04*
U.S. Cl. 228—103 **17 Claims**



1. A method which provides precise alignment geometry of a rock bit wherein the bit size parameters are determined and monitored during the bit welding process comprising the steps of:

positioning at least one electronic sensing system mounted to a housing adjacent said rock bit,

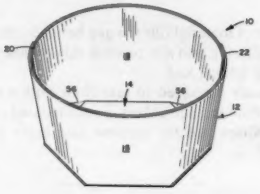
rotating said rock bit mounted to a rotatable weld fixture spaced from said at least one electronic sensing system about its axis, and actuating said at least one electronic sensing system to continuously monitor the bit size parameters during said welding process.

4,210,271

TUB-SHAPED CARTON AND BLANK FOR FORMING SAME

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 829,720, Sep. 1, 1977, Pat. No. 4,153,196. This application Jul. 14, 1978, Ser. No. 924,655
Int. Cl.[2] B65D *3/04, 5/24*
U.S. Cl. 229—1.5 B **2 Claims**



1. A tub shaped carton comprising:

(a) a hexagonal base

(b) a cylindrically-shaped side wall formed of first and second side wall panels joined at side wall seams,

(i) each of said side wall panels having a generally arcuate top edge and

(ii) a bottom edge congruent with three sides of said hexagonal base,

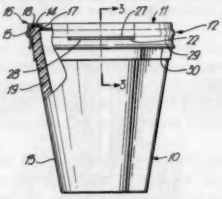
(iii) the middle portion of said bottom edge of each side wall panel being congruent with, hingedly connected to and integrally formed with one of opposing sides of said hexagonal base, and

(c) closure means attached between each of the remaining sides of said hexagonal base and an adjacent side wall panel to close the space therebetween, said closure means comprising a single ply, triangular panel having one edge thereof formed integral with portions of said carton adjacent said bottom edge of said side wall, the remaining two edges of said triangular panel being individually defined by cut lines, and wherein an altitude reference line extending perpendicular to the base edge of said triangular panel and through the vertex of said triangular panel opposite said base edge thereof intersects said base edge at an area along said base edge spaced from the mid-point of said base edge in a direction toward the corresponding side wall seam, portions of said triangular panel immediately adjacent said reference line presenting increased surface area which is adhesively attached between said hexagonal base and said adjacent side wall panel whereby to strengthen the attachment between said hexagonal base and said first and second side wall panels adjacent said side wall seams, each of said triangular panels having one face thereof adhesively bonded to interior surface areas of said hexagonal base, said triangular panels being positioned in a flattened condition against said hexagonal base, said base edge of each of said triangular panels being hingedly connected by a fold line to a corresponding one of said first and second side wall panels.

4,210,272
CONTAINER LID

Maurice Sequin, Windsor, Canada, assignor to Michael M. Sakovich, Ottawa, Canada

Filed Jun. 27, 1978, Ser. No. 919,480
Int. Cl.[2] B65D 5/66, 5/72
U.S. Cl. 229—7 R 14 Claims



1. A lid for a container having an open end defined by a circumferential edge of a sidewall including lid engagement means, the lid comprising:

a disc having thin walls of uniform thickness throughout for spanning and overlapping the open end, the overlapping portion including a downwardly depending resilient skirt adapted to partly overlie in engaging relation one surface of the sidewall adjacent said edge;

complementary engagement means formed in the skirt for releasably engaging the lid engagement means;

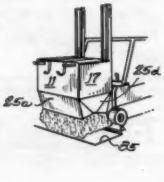
a reclosable tear strip forming an integral part of the disc and said skirt, the strip having sides defined by fracture lines formed in the disc, an outer end defined by said lines extending into the skirt to include said complementary engagement means, an inner end forming a hinge along a weakened line in said disc and wherein said lines extending into the skirt terminate at a slot having an upper edge defining the outer end below said complementary engagement means, and a lower edge bounding one side of a strip defined by the lower edge of the slot and a bottom edge of the skirt; and

means for venting the container.

4,210,273
BOTTOM-UNLOADING BULK CONTAINER

Charles D. Hegele, Knoxville, Tenn., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Feb. 22, 1979, Ser. No. 14,240
Int. Cl.[2] B65D 5/72, 17/00
U.S. Cl. 229—17 B 11 Claims



1. A bottom-unloading bulk container which comprises

a body having a pair of vertical sidewalls and a pair of vertical end walls,

bottom closure means closing the opening at the bottom of said body,

top closure means covering the opening at the upper end of said body which includes a pair of top flaps hinged to the top edges of said sidewalls,

openings means in said side walls spaced apart from each other and proportioned to receive the protruding tines of a forklift truck,

rigid support means extending generally longitudinally of said body transverse to said end walls,

said opening means being located a predetermined distance below the top edge of said sidewalls, which distance is about equal to the vertical dimension of said rigid support means,

means for locating said rigid support means just above said sidewall opening means, and

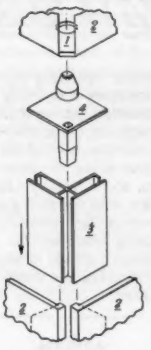
banding means encircling said body and said top and bottom closure means to secure said bulk container during shipment

whereby said container can be lifted and transported to an unloading location by a forklift truck whose tines extend through said opening means in said sidewalls and its contents dumped through the bottom opening upon release of said encircling banding means.

4,210,274
BOXES

Lionel Leonard, Drumelzier House, Donnington Rd., Bicker, near Boston, Lincolnshire, England

Filed Jan. 5, 1979, Ser. No. 1,228
Claims priority, application United Kingdom, Jan. 6, 1978, 553/78; May 23, 1978, 21674/78
Int. Cl.[2] B65D 5/42, 57/00
U.S. Cl. 229—49 6 Claims



1. A box having a base and sidewalls folded up from the base, the sidewalls being held at their ends to form the corners of the box by extruded section corner posts, each corner post including a plurality of elongate channels open at both ends to enable the post to be slid axially on to the ends of adjacent sidewalls to hold the walls together at the corner of the box and in planes substantially perpendicular to the base, and including means comprising a plurality of stacking pegs each having a first and a second extremity enabling one box to be stacked on top of a like box with the two corner posts at each corner of the stack of two boxes so formed being vertically aligned, each said corner post at its top including means for engagement with a first extremity of a stacking peg, said base including adjacent a plurality of its corners means for engagement with a second extremity of a stacking peg, and each stacking peg having an offset configuration whereby each peg is engageable via the first extremity thereof with said engagement means at the top of a corner post and via the second extremity thereof with said engagement means in the base of a like box stacked immediately above, and the two boxes so stacked are positively prevented from moving laterally with respect to each other.

4,210,275

CONTINUOUSLY OPERATING CENTRIFUGAL SEPARATOR

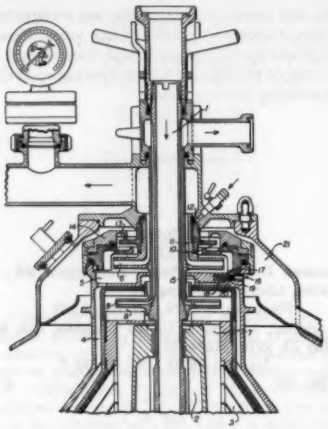
Karl-Heinz Zettler, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator Aktiengesellschaft, Oelde Westfalen, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,367

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737463

Int. Cl.² B04B *11/00*

U.S. Cl. 233—20 R 6 Claims



1. In the continuously operating separating centrifuge for separation of liquid mixtures, comprising a separating chamber for effecting the separation, paring means including a paring chamber, for continuous discharge of a separated liquid phase from the separating chamber, air seal means disposed over the paring means for preventing air from entering the paring chamber from above, and a radially extending overflow passage in communication with the paring chamber and with the outside of the centrifuge for receiving and discharging of overflow of the paring chamber, the improvement which comprises shut-off means disposed in the overflow passage for preventing air from entering the overflow passage from the outside of the centrifuge.

4,210,276

CENTRIFUGAL FLUID CLEANER

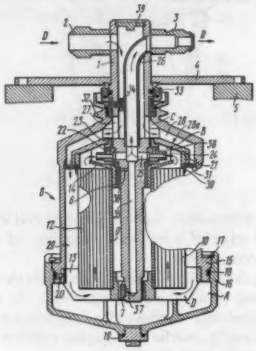
Igor M. Lapshev, ulitsa 20 let VLKSM, 21, kv. 13; Nikolai A. Khodosov, Oktyabrsky poselok, 6 linia, 36, and Viktor A. Berber, Shelkovichnaya ulitsa, 184, kv. 65, all of Saratov, U.S.S.R.

Filed May 26, 1978, Ser. No. 909,991

Int. Cl.² B04B *11/02*

U.S. Cl. 233—31 4 Claims

1. A centrifugal fluid cleaner comprising: a base, a hollow shaft positioned vertically, fixed rigidly to said base and provided with conduits for the supply and removal of fluid arranged in the shaft upper part; a cylindrical rotor rotatably mounted on said hollow shaft; a drive to impart rotation to said cylindrical rotor consisting of a sleeve coaxial with said hollow shaft, an upper impeller press-fitted into said sleeve at the upper end and intended to accelerate a gyratory movement of the fluid, a lower impeller fitted into the said sleeve at the lower end and designed to promote the gyratory movement of the fluid, a band attached at one end to said sleeve and coiled around it in a helical manner, spacers installed in a radial array between adjacent turns of said helical band preferably in parallel with said hollow shaft, slots for conveyance of working fluid, said slots being formed by said spacers and said helical band, a casing secured to said upper and lower impellers and enclosing said sleeve-and-band assembly and said upper and lower impellers; a cavity in said casing, which is formed between the casing lower part and bottom end face of said band-and-sleeve assembly and used to accommodate said lower impeller, a chamber formed in said casing for accommodation of said upper impeller and communicating with the outlet conduit in said hollow shaft, an additional cavity formed between said casing and said chamber and communicating with the inlet conduit in said hollow shaft, an annular duct formed between said casing and the peripheral turn of said helical band and providing communication of said additional cavity with said lower cavity; an impeller made in said additional cavity; a pressure disk mounted on said hollow shaft within said chamber, whose function is to transfer the purified fluid into the expulsion line.



4,210,277

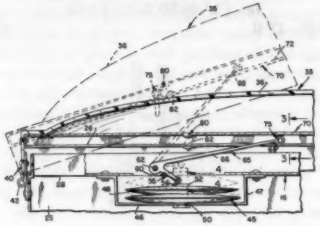
AUTOMATIC ROOF VENTILATOR

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Continuation-in-part of Ser. No. 832,482, Sep. 12, 1977, Pat. No. 4,123,001. This application Sep. 25, 1978, Ser. No. 945,784

Int. Cl.² F24F *7/02*

U.S. Cl. 236—49 7 Claims



1. An automatic temperature responsive assembly for ventilating through a roof a confined space to the atmosphere whereby heat buildup in the confined space may be released from the confined space, said assembly comprising:

A. housing means adapted to be coupled to the roof of the confined space and having an opening extending therethrough,

B. cover means operatively associated with said housing means,

C. mounting means operatively associated with said housing means for pivotally securing said cover means thereto, so

as to be movable between a generally open position and a generally closed position for enclosing said opening,

D. a temperature responsive drive assembly mounted to detect temperature changes in the confined space and adapted to actuate in response to temperature changes within a predetermined range,

E. camming means pivotally secured relative to said housing means and including a camming surface thereon for engaging said drive assembly,

F. transmission means operatively extending between said cover means and said camming means for communicating movement of said drive assembly through said camming means, such that said cover means is moved to varying positions in response to temperature changes in the confined space,

G. guide means for providing controlled movement of said transmission means in the directions for obtaining said open position and said closed position of said cover means, so as to obtain an automatic closing of said cover means in relationship to the movement in said drive assembly,

H. said drive assembly comprises:

(1) a bottom plate,

(2) means for retaining said plate in spatially fixed position relative to said housing means,

(3) a fluid-containing bellows unit capable of expanding and contracting in response to temperature changes between predetermined limits and to generate a force upon expansion, and

(4) said bellows having one end connected to said bottom plate such that the opposite end thereof is free for moving towards and away from said camming means,

I. said transmission means includes a transmission arm mounted in fixed relation relative to said camming means and having a distal end operative for movement relative to said guide means,

J. said guide means includes:

(5) a channel associated with said cover means extending substantially thereacross, and

(6) a transmission element mounted on said distal end of said transmission arm and adapted for reciprocal movement within said channel in response to expansion and contraction of said bellows resulting in movement of said free end thereof.

4,210,278

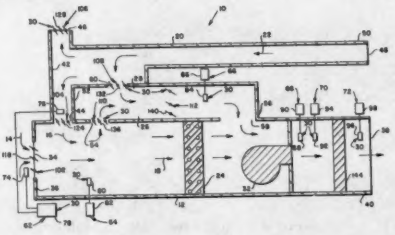
APPARATUS FOR SUPPLYING CONDITIONED AIR AT A SUBSTANTIALLY CONSTANT TEMPERATURE AND HUMIDITY

Henry D. Obler, Lanham, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 6, 1979, Ser. No. 9,886

Int. Cl.[2] F24F *13/04*

U.S. Cl. 236—49 **15 Claims**



1. Apparatus for supplying conditioned air at a substantially constant temperature and humidity comprising:

supply duct means coupled to a source of supply air for carrying said supply air therethrough;

return duct means coupled to said supply duct means for carrying return conditioned air therethrough;

means for reducing the temperature of said supply and said return conditioned air;

by-pass duct means coupled to said supply duct means for selectively directing portions of said supply and said return conditioned air around said reducing means;

another by-pass duct means coupled to said return duct means for selectively directing portions of said return conditioned air around said supply duct means and said reducing means;

first thermostat means within said supply duct means for sensing the temperature of said supply air;

first damper means coupled to said first thermostat means for regulating the flow of said return conditioned air to the outside of said apparatus;

second damper means coupled to said first thermostat means for regulating the flow of said return conditioned air into said supply duct means;

third damper means coupled to said first thermostat means for regulating the flow of outside air into the supply duct means;

humidistat means within said by-pass duct means for sensing the humidity of said supply air and said return conditioned air;

fourth damper means coupled to said humidistat means for regulating the flow of said return conditioned air within said another by-pass duct means;

fifth damper means coupled to said humidistat means for regulating the flow of said supply air and said return conditioned air within said by-pass duct means;

second thermostat means within said supply duct means for sensing the temperature of said conditioned air;

sixth damper means coupled to said second thermostat means for regulating the flow of the supply air and said return conditioned air within said by-pass duct means; and

means for moving said supply air, said return conditioned air and said conditioned air through said supply duct means, said return duct means, said by-pass duct means, and said another by-pass duct means.

4,210,279

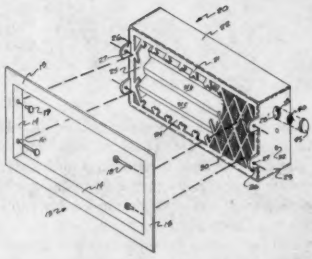
TEMPERATURE-RESPONSIVE AUTOMATIC VENTILATOR

Edward D. McSwain, Rte. 7, Box 325, Lincolnton, N.C.

Filed Mar. 1, 1979, Ser. No. 16,491

Int. Cl.[2] F24F *7/00, 13/14*

U.S. Cl. 236—49 **11 Claims**



1. An automatic ventilator comprising:

(a) a housing, said housing having peripheral side walls defining an air passageway therethrough, one of said side walls defining a spring receiving opening therein, said spring receiving opening being generally circular and defining a peripheral slot extending radially therefrom;

(b) at least one shutter element received in said air passageway and mounted to said housing for rotary movement between a closed position where the passageway is gener-

ally closed and an open position where the passageway is generally open to the passage of ventilating air therethrough;

(c) temperature responsive spring means received in said spring receiving opening, an outer end of said spring means being received in said slot to preclude rotation of said spring means;

(d) rod means connected directly between said spring means and said shutter element whereby temperature variation effects on said spring means cause said shutter element to move toward an open or closed position; and

(e) cap means receivable in said side wall opening, said cap means having a plurality of members extending outwardly therefrom, said members having a shoulder at an outer end, certain of said shoulders being on opposite sides of said members from other of said shoulder, certain of said shoulders engaging an inside surface of said side wall and certain of said shoulders engaging a side of said spring, whereby said cap when inserted into said side wall opening secures said spring means within said side wall.

4,210,280

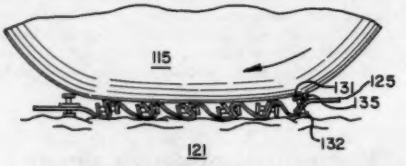
TRACTION MAT

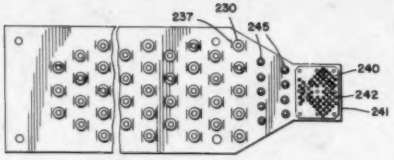
Robert J. Reisner, 1624 N. Kilbourn Ave., Chicago, Ill. 60639

Continuation-in-part of Ser. No. 912,053, Jun. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 900,565, Apr. 27, 1978, abandoned. This application Aug. 22, 1978, Ser. No. 935,975

Int. Cl.[2] E01B *23/00*

U.S. Cl. 238—14 **17 Claims**





1. A traction mat assembly for obtaining increased traction for an automotive vehicle wheel on a ground surface, said traction mat comprising a substantially uniformly thick resilient sheet having a plurality of spaced openings, a plurality of pin assemblies, each comprising a pin loosely captivated in an opening having a stem portion and opposing ends, each of said opposing ends extending beyond a surface of said sheet, said pin being movable into and out of the plane of said sheet and pivotable about a point in the plane of said sheet to a position where one of said opposing ends is proximate to said surface of said traction mat assembly, said pin thereby engaging both said wheel of said vehicle with which it may be in contact and the ground surface underneath said traction mat, each of said pin assemblies pivoting independently of the others, and the collective action of said pin assemblies within said traction mat assembly being sufficient to provide increased traction of said wheel with respect to the ground.

4,210,281

SPRING TYPE ANCHORS

Graham M. Fee, Geneva, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Sep. 5, 1978, Ser. No. 939,124

Int. Cl.[2] E01B *13/02*

U.S. Cl. 238—327 R **10 Claims**

1. A one-piece spring-type rail anchor of substantially uniform wall thickness, for gripping the base of a rail having laterally projecting flanges, said anchor comprising:

(a) a downwardly bowed throat portion;

(b) a pair of generally C-shaped members for engaging the laterally projecting flanges of a rail base, said C-shaped members extending from opposing ends of said throat; and

(c) a pair of rail bearing surfaces for engaging the base of said rail at spaced locations thereacross, said bearing surfaces being at the junctures of said C-shaped members and said throat; wherein said rail anchor has a generally inverted U-shaped cross-section comprised of a pair of substantially parallel side walls joined by a connecting web.

4,210,282

METHOD OF WATERING

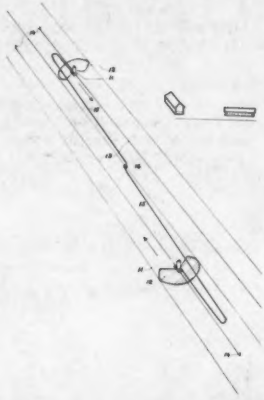
Lars G. Hermelin, Mariebergs säteri, 640 20 Björkvik, Sweden

Filed Feb. 28, 1978, Ser. No. 881,939

Claims priority, application Sweden, Mar. 3, 1977, 7702416

Int. Cl.[2] B05B *1/08, 3/18*

U.S. Cl. 239—11 **5 Claims**

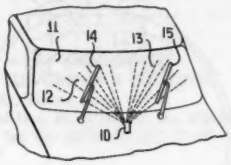


1. A method of watering while using a watering apparatus comprising a pressure vessel and a spray device and to which water is supplied through a hose, comprising the steps of discharging intermittently from the pressure vessel the water supplied thereto, and intermittently moving the watering apparatus along a given path during the recharging of the pressure vessel by utilising the energy stored in the water.

4,210,283
DUAL PATTERN WINDSHIELD WASHER NOZZLE

Ronald D. Stouffer, Silver Spring, Md., and Bowles Fluidics Corporation, 02, Silver Spring, Md.

Filed Sep. 11, 1978, Ser. No. 941,158
Int. Cl.[2] B05B *1/08*
U.S. Cl. 239—11 15 Claims



1. A device for receiving pressurized fluid and dispersing that fluid simultaneously in two distinct cyclical flow patterns, said device comprising:

a housing member;

a chamber defined in said housing member, said chamber having a top wall, a bottom wall, an upstream end, an open downstream end, and two opposed sidewalls extending between said upstream and downstream ends;

inlet means opening into said chamber, said inlet means being adapted to admit pressurized fluid into said chamber;

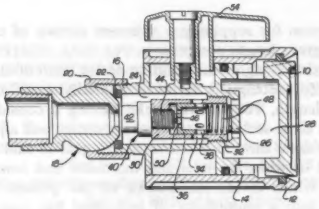
vortex-shedding means in said chamber comprising an obstruction body having surface means disposed in a flow path between said inlet means and said open downstream end to create downstream of the surface means a cavitation region around which vortices of clockwise and counterclockwise flow directions are alternately shed by said surface means and travel along with the pressurized fluid; and

flow splitter means disposed in said cavitation region to define two distinct outlet openings with respective sidewalls at the open downstream end of said chamber from which said clockwise and counterclockwise flowing vortices alternately issue to an ambient environment.

4,210,284
TEMPERATURE LIMITING DEVICE

Matthew G. Tarnay, Pasadena, and Sidney K. Krieff, Los Angeles, both of Calif., assignors to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Sep. 21, 1978, Ser. No. 944,418
Int. Cl.[2] F16K *17/38*
U.S. Cl. 239—75 1 Claim



1. In a temperature limiting device:

(a) means forming a control chamber having an inlet at one end adjusted to connect with a source of water for bathing and an outlet at the other end adapted to connect with a water delivery device;

(b) a cylinder mounted in the control chamber and having one end facing the inlet, and its other end communicating with said outlet, said cylinder having peripheral openings defining a path of water from the inlet, about the cylinder, through the cylinder openings to said other end of the cylinder and said outlet;

(c) a control member in the cylinder and slidable therein to open and to restrict said path of water, said control member having uninterrupted passage means freely to conduct water from said one end of said cylinder, through said control member to the open end of the cylinder to equalize fluid pressure on said control member;

(d) a thermal sensing element attached to the exterior of said one end of said cylinder and positioned to be exposed to the path of water between said inlet and said cylinder openings, said sensing element having a part movable to engage said control member to move said control member to restricting position;

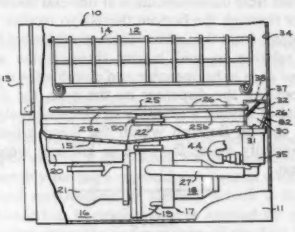
(e) a return spring engaging said control member to maintain said control member in following relationship with said sensing element part;

(f) restricted flow past said sensing element causing said sensing element to be responsive to the readjusted mix temperature at a place upstream of the control member whereby the pressure balanced control member rapidly resets to full flow.

4,210,285
DISHWASHER HAVING IMPROVED SPRAY ARM

John A. Dicken, Jr., and David B. Ash, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 16, 1977, Ser. No. 861,317
Int. Cl.[2] B05B *3/06*
U.S. Cl. 239—251 6 Claims



1. A spray assembly for an automatic dishwasher comprising conduit means for receiving pressurized washing liquid located centrally of the spray assembly;

a hollow elongated spray arm having at least one radially extending projection including upper and lower walls interconnected by side walls defining a passageway adapted to receive said liquid therein and rotate about said conduit means and an end section;

said projection having a plurality of orifices formed in said upper wall portion for distributing said liquid throughout the dishwasher, an opening in said projection being arranged to include at least a portion thereof in said end section being aligned with said passageway;

guide means disposed within said projection being positioned between said walls and extending radially from said conduit means to a position adjacent said opening, said guide means being dimensioned for directing elongated foreign objects having a cross-section smaller than the opening and a length greater than height of said passageway,

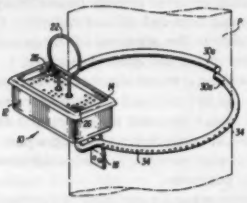
said guide means being dimensioned to orient said objects such that the elongated dimension becomes aligned with said orifice for passing therethrough.

4,210,286

POLE MOUNTED WEED KILLER DISPENSER

Ray C. Smitherman, 896 Old Brook Rd., Charlottesville, Va. 22901

Filed Oct. 30, 1978, Ser. No. 955,587
Int. Cl.[2] B05B 1/14; A01G 29/00
U.S. Cl. 239—302 4 Claims



1. A weed killer dispenser adapted to be mounted on and disposed about a pole, said dispenser comprising:

a box-like holder for water and water dispersible or water soluble weed killer, said holder having a recessed top which defines a water receiving perforated tray through which rain water may flow into the holder, said top being removable from said holder, weed killer containers in said holder, said containers being connected to said top so as to be removable therewith from said holder and replaceable; and

a liquid distributor comprising a pair of tubes, one of said tubes having a first substantially semi-circular part adapted to surround substantially one-half of the pole, the other of said tubes having a first substantially semi-circular part adapted to surround substantially the other half of the pole, each of said tubes having a substantially vertical part directly connected to said first part thereof and being in direct fluid communication at one end thereof with said holder through the bottom thereof to receive weed killer in a liquid from the holder, each of said tubes being pivotable relative to said holder through the second part thereof so as to be openable and closable for mounting and dismounting the dispenser on the pole, the first parts of said tubes having a plurality of circumferentially spaced holes therein through which the weed killer may flow downwardly along the pole to kill any weeds or vines thereon.

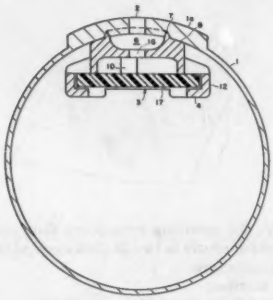
4,210,287

DRIP IRRIGATION SYSTEM

Raphael Mehoudar, Tel Aviv, Israel, assignor to Hydro-Plan engineering Ltd. and Netafim Mutzarei Hashkaya Vetiftuf Bekibbutz Hatzerm, both of Tel Aviv, Israel

Filed Nov. 21, 1978, Ser. No. 962,688
Claims priority, application Israel, Nov. 24, 1977, 53463
Int. Cl.[2] B05B 15/00, 1/20
U.S. Cl. 239—542 14 Claims

1. A drip irrigation system comprising a thin walled thermoplastic conduit for conducting irrigation liquid having formed integrally therewith an axially directed wall portion of increased thickness, outlet apertures formed in said wall portion in an axially spaced relationship, a plurality of discrete, substantially flat emitter units, respectively heat welded to axially spaced apart locations of an inner surface of said wall portion which locations respectively include said apertures, each emitter unit comprising a body member of a substantially rigid thermoplastic material which is heat sealable with respect to the conduit, said body member having a first portion thereof heat welded to one of said spaced apart inner surface locations in a juxtaposed relationship with an outlet aperture and having a second and opposite portion thereof with an elongated groove formed therein, a cover member juxtaposed with respect to said second portion and defining with said groove a flow restricting flowpath spaced and thermally shielded from said first portion, directed towards the interior of said conduit and located substantially in the flow direction of said conduit, emitter unit inlets serving respectively to effect communication between the conduit interior and the inlet portions of the flowpaths, and emitter unit outlets serving respectively to effect communication between adjacently formed outlet apertures of said conduit and the outlet portions of said flowpaths,



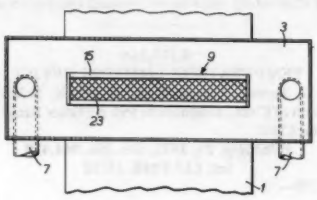
and wherein said cover member is constituted by a resiliently flexible membrane formed of a natural or synthetic elastomeric material and displaceable toward and away from said flow restricting flowpath in accordance with flow pressure variations in said conduit so as to stabilise the output rate of said emitter unit with respect to said variations.

4,210,288

COOLING APPARATUS

John C. Dobson, Sheffield, England, assignor to Davy-Loewy Limited, Sheffield, England

Filed Feb. 3, 1978, Ser. No. 874,740
Claims priority, application United Kingdom, Feb. 7, 1977, 4932/77
Int. Cl.[2] B05B 1/00
U.S. Cl. 239—597 11 Claims



1. Apparatus for supplying a coherent curtain of cooling liquid of a given length comprising:

(a) a nozzle having an inlet and an outlet, each of elongate generally rectangular form substantially equal to said given length, but with the inlet having a considerably greater cross-sectional area than the outlet, and a portion of said same form and substantially equal to said length located between the inlet and the outlet and containing means which divide the interior of that portion of the nozzle into a multiplicity of individual but continuous passages extending in the direction between said inlet and said outlet,

(b) said portion also having a constraining portion located between said inlet and said means being at least equal in cross sectional area to the cross-sectional area of the adjacent portion of said means,

(c) a header tank having provision for receiving liquid coolant and in which at least the inlet of the nozzle is located,

and wherein the outlet of the nozzle is outside of the header tank or communicates with an elongate slot in a wall of the header tank,

(d) said header tank arranged to extend substantially parallel to and be at least equal to said given length, and

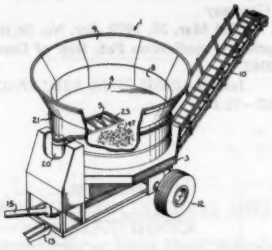
(e) said elongated slot arranged to extend substantially parallel to and substantially equal to said given length. outlet of the nozzle.

4,210,289

TUB GRINDER CONTROL

Adrian F. Arnoldy, Tipton, Kans. 67485

Filed Dec. 26, 1978, Ser. No. 972,794
Int. Cl.² B02C *13/286, 25/00*
U.S. Cl. 241—27 **6 Claims**



1. Livestock feed tub grinding apparatus comprising:

(a) a rotating hammermill powered by a prime mover and a tub for holding feed and being rotated by power means slaved to said hammermill prime mover by a governor, said tub having a bottom, an aperture in said tub bottom wherethrough said feed is delivered to said hammermill; and

(b) a dampener associated with said governor; said dampener being operably connected to said tub rotation power means and decelerating same in direct relation to the deceleration of the rotation of said hammermill;

(c) said dampener further delaying the acceleration of said tub rotation means with respect to the acceleration of the rotation of said hammermill; whereby rotational speed of said tub decreases as soon as said hammermill becomes overloaded but rotational speed of said tub increases at a slower rate than said hammermill.

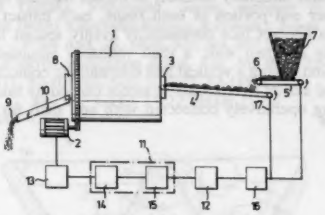
4,210,290

METHOD AND APPARATUS FOR CONTROLLABLY SUPPLYING MATERIAL TO A ROD MILL IN ACCORDANCE WITH POWER CONSUMPTION OF THE ROD MILL MOTOR

Roy E. P. Andersson, and Jan A. Bohm, both of Gallivare, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Sep. 7, 1978, Ser. No. 940,285
Claims priority, application Sweden, Sep. 13, 1977, 7710256
Int. Cl.² B02C *17/00, 25/00*
U.S. Cl. 241—30 **5 Claims**

1. A method for operating a grinding plant of the type including a motor-driven rod mill and a means for controllably supplying material to be ground to said rod mill, comprising the step of adjusting the supply of material delivered by said means by increasing the supply of material upon an increase in the power consumption of the mill motor and decreasing the supply of material upon a decrease in the power consumption of the mill motor such that the power consumption of the mill motor is maintained within a region which exceeds the power



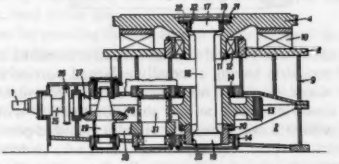
consumption of the mill motor at the occurrence of a rod jam by approximately 0.5–2%.

4,210,291

ROLLER MILL

Hans Kienast, Vienna, Austria, assignor to Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H., Vienna, Austria

Filed Jul. 10, 1978, Ser. No. 923,664
Int. Cl.² B02C *15/00*
U.S. Cl. 241—110 **8 Claims**



1. A roller mill having a drive system for rotating a milling bowl which rotates about a vertical axis and contains at least one milling roller, a thrust bearing located below the bowl for absorbing downward forces on the bowl, a vertical shaft coaxial with the bowl for transmitting drive without relative rotation to the bowl from an axially-vertical gear wheel provided at the output end of a step-down drive transmission, a first bearing assembly having a vertical axis coaxial with the axis of the bowl and surrounding an element which is fixed to said bowl for absorbing horizontal forces exerted by the bowl, a second bearing assembly independent of the first bearing assembly, said second bearing assembly being coaxial with said first bearing assembly and said output gear rotating in said second bearing assembly, and a self-centering coupling arrangement coaxial with the vertical shaft connecting said output gear with the vertical shaft and connecting the vertical shaft with the bowl for absorbing minor axial inaccuracies between the shaft and the bowl.

4,210,292

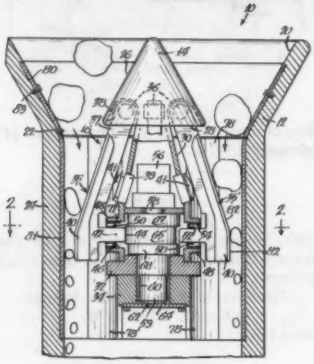
IMPACT ROCK CRUSHER

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 15, 1978, Ser. No. 942,832
Int. Cl.² B02C *1/02*
U.S. Cl. 241—148 **10 Claims**

1. A mechanically driven impact rock-crushing apparatus, comprising: a stationary member having an internal tubular vertically disposed wall defining an opening extending vertically therethrough, a divider carried by said stationary member and being disposed at the entry end of said opening, said divider having a cone-shaped portion centrally disposed with respect to said entry end of said opening, at least two shanks carried by said divider, each shank being pivoted at one end portion on said divider and having the other end portion ex-

tending downwardly in said vertically extending opening and being movable toward and away from said vertically disposed wall of said stationary member, an impact hammer carried by said other end portion of each shank, each impact hammer having a contact face substantially evenly spaced from said vertically disposed wall, a shaft rotatably mounted in said divider and having a vertical axis substantially coinciding with a vertical axis of said divider, a motor carried by said divider and being operatively connected with said shaft for rotating



said shaft about said vertical axis, an eccentric mounted on said shaft said eccentric having a radially enlarged portion engaging each shank on each revolution of said eccentric, and flywheel means mounted on said shaft for rotation with said shaft and with said eccentric, said radially enlarged portion of said eccentric successively impacting said shanks to drive said impact hammers toward said vertically disposed wall of said stationary member to crush rocks between said contact faces of said impact hammers and said vertically disposed wall.

4,210,293

STRAND TRANSFER

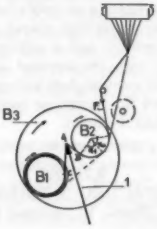
Georges Fromaget, Servolex, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 10, 1979, Ser. No. 37,538

Claims priority, application France, May 12, 1978, 78 14143

Int. Cl.[2] B65H *54/02, 67/04*

U.S. Cl. 242—18 A **14 Claims**



1. Apparatus for the attenuation and winding of glass strand or like materials, said apparatus comprising an indexable turret having plural cylindrical winding collets mounted for rotation at spaced apart locations thereon, drive means for rotation of said collets and for indexing of said turret to a position in which an empty collet is shifted to a winding station in which strand is wound on its surface and an adjacent collet on which strand has been wound is shifted to a transfer station, said drive means maintaining the collets at each of said stations in rotation and a shiftable strand engaging control device moveable from a retracted position clear of the collets upon indexing movement of the turret to an operative position when a rotating empty collet is at the winding station, said strand engaging control device having an end portion configured to abrade and to press the strand between the full and empty collets when in said operative position to bring the strand into contact with a substantial portion of the circumference of said empty collet, the arc of contact being sufficient to effect adherence of the strand to the empty collet and to effect breakage of the strand between the full and empty collet by abrasion on the end portion of the control device as winding is commenced on the empty collet and continues on the full collet.

4,210,294

STRIP REEL

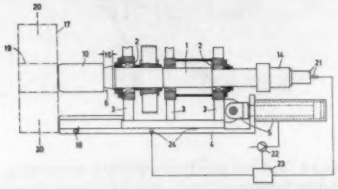
Johannes Jansen, Hilchenbach-Allenbach, Fed. Rep. of Germany, assignor to Schloemann-Siemag Akt., Düsseldorf, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 24,160

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2818042

Int. Cl.[2] B65H *75/18*; B21C *47/02*

U.S. Cl. 242—72.1 **6 Claims**



1. Method of operating a strip reel having a hollow shaft with a central longitudinal axis and a free end, a reel housing for rotatably supporting the hollow shaft and mounted on the stationary reel bed for movement along said axis, and an expandable drum mounted on the free end of the shaft for axial movement with the shaft and axial movement relative to the shaft, said drum having a plurality of segments which move in a transverse direction to said axis upon movement of the said axis relative to the shaft, said method comprising the steps of:

(a) moving the housing along said axis in a first-direction until the drum occupies a reel unwinding position,

(b) moving the drum along said axis relative to the shaft in a second direction opposite to the first direction and causing the segments to move in said transverse direction,

(c) measuring the amount of movement of the drum in said second direction, and

(d) moving the housing along said axis in said first direction an amount equal to said measured amount.

4,210,295

CABLE CLAMP FOR FASTENING A CABLE ONTO A CABLE SPOOL

André Brusselle, Kemmelbergstraat 33, Oostende, Belgium

Filed Aug. 23, 1978, Ser. No. 936,128

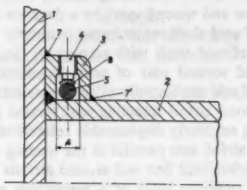
Claims priority, application Belgium, Aug. 23, 1977, 0180374

Int. Cl.[2] B65H *75/28*

U.S. Cl. 242—125.1 **5 Claims**

1. A cable clamp assembly for use with winches having a spool on which a cable made from several strands is wound, said spool being provided with a flange at each end thereof, wherein, said clamp assembly is secured to the spool and to an inner face of said flange, said clamp assembly comprises : a

body; a longitudinal slot formed in said body for receiving the cable and means recessed in the body and terminating within



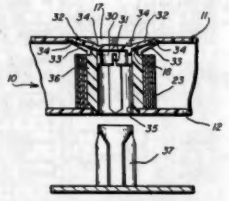
said slot cooperating with the body for pressing said cable between the spool and the clamp assembly.

4,210,296

RIBBON CARTRIDGE WITH INTEGRAL ANTI SPOOL ROTATION DEVICE

Thomas E. Frechette, Windsor Locks, Conn., assignor to Royal Business Machines, Inc., Hartford, Conn.

Filed Dec. 26, 1978, Ser. No. 972,996
Int. Cl.[2] B41J *15/00*; B65H *75/02*
U.S. Cl. 242—198 **4 Claims**



1. An inked ribbon cartridge having cover, side and bottom walls and hollow core ribbon supply and take-up spools rotatably mounted therein with ribbon extending from said supply to said take-up spool exteriorly of the cartridge through exit and entry openings in said side wall,

said cover wall being formed with circular depressions and openings at the center of said depressions, and said bottom wall having openings aligned with said cover wall openings, said cover and bottom wall openings providing bearings for said rotatably mounted spools,

means integrally formed with said cover wall and bridging the depression surrounding the cover wall opening rotatably supporting said supply spool,

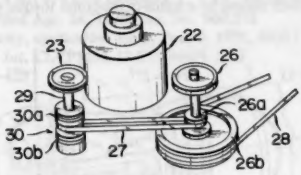
said means comprising a supply spool core insert, and arms resiliently connected to said cover wall and said core insert for supporting said core insert above said supply spool core and for permitting said core insert to be axially moved and pushed into frictional engagement with said supply spool core to restrain rotation of said supply spool, and to permit axial movement of said core insert out of frictional engagement with said supply spool core by a supply spool support post incident to mounting said cartridge in a machine.

4,210,297

TAPE DRIVING SYSTEM FOR A TAPE RECORDER

Katsuyuki Tamaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 28, 1978, Ser. No. 937,547
Claims priority, application Japan, Aug. 31, 1977, 52-103626; Sep. 7, 1977, 52-106652; Sep. 7, 1977, 52-119456[U]
Int. Cl.[2] G11B *15/22*; B11B *15/30*
U.S. Cl. 242—201 **6 Claims**



1. A tape driving system for operating in at least recording-reproduction, stop and fast-forward modes comprising:

a base;

a supply reel holder rotatably supported on the base;

a take-up reel holder rotatably supported on the base;

a fast feed drive tire;

means for pressing the fast feed drive tire against the take-up reel holder during the fast-forward mode and not the stop mode;

means for rotating the fast feed drive tire in at least the fast-forward mode;

means for driving the take-up reel holder including:

a motor,

a take-up tire,

means for pressing the take-up tire against the take-up reel holder during the recording-reproduction and stop modes, and

clutch means for transmitting force from the motor to the take-up tire, the clutch means including a first portion operatively connected to the motor, a second portion frictionally engaged with the first portion and operatively connected to the take-up tire, so that force is transmitted from the first portion to the second portion and the force applied to the second portion is limited to a predetermined maximum; and

means for braking the supply reel holder during the stop mode,

the clutch means preventing excessive force from being applied to the take-up reel during the recording-reproduction mode, and the inertia of the motor, clutch means, pressing means, take-up tire and braking means cooperating to prevent slack in the tape in the stop mode.

4,210,298

ELECTRO-MECHANICAL GUIDANCE ACTUATOR FOR A MISSILE

Harold J. Liberman, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 1, 1978, Ser. No. 930,301
Int. Cl.[2] F42B *15/16*
U.S. Cl. 244—3.21 **9 Claims**

1. An electro-mechanical actuator for in-flight guidance of a missile toward a target which comprises:

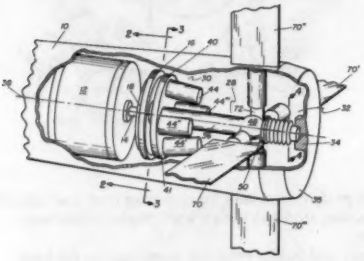
a tubularly shaped missile airframe having a longitudinal axis therethrough and an axially disposed hub located on an interior rear wall of said missile airframe;

prime mover means for generating a unidirectional constant torque output, said prime mover means having a longitudinal axis axially aligned with said longitudinal axis of said missile airframe;

cam means fixedly axially connected to said prime mover means for changing from a neutral guide position to a plurality of selected guide positions;

electro-mechanical solenoid means for mechanically engaging said cam means upon receipt of an energizing electrical signal;

cantilever moment arm means, axially supported in said missile airframe, for operatively positioning said solenoid means proximate to said cam means, and for converting said unidirectional constant torque output of said prime mover means to a multi-orthogonal torque output;



vane means rotatably disposed in said missile airframe and cooperatively slidably connected to said cantilever moment arm means, for guiding said missile toward the target; and

biased control means, axially disposed intermediate said hub and a first end of said cantilever moment arm means, for providing rotatable support for said first end of said cantilever moment arm means and for providing a spring force to automatically maintain and return to a neutral guide position from a guide position when said solenoid means is not receiving said energizing electrical signal.

4,210,299

PROPULSIVE LIFTING ROTORS

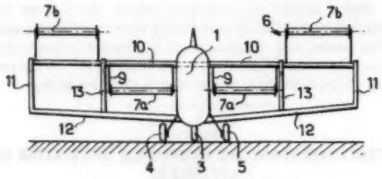
Marcel Chabonat, 4, Villa Etienne Mulot, 78000 Versailles, France

Filed Dec. 23, 1977, Ser. No. 863,626

Claims priority, application France, Dec. 27, 1976, 76 39820

Int. Cl.[2] B64C *27/00, 29/00, 39/00*

U.S. Cl. 244—20 **6 Claims**



1. A rotary-airfoil aircraft comprising:

a fuselage having a vertical longitudinal median plane;

a pair of rotors mounted on said fuselage symmetric on opposite sides of the median plane and rotatable about respective axes substantially transverse to said plane, each of said rotors comprising:

a drive shaft transverse to said median plane and rotatable about the respective axis,

a first pair of arms extending radially from said shaft and axially spaced about it therealong by a distance less than the length of said shaft over a first section thereof,

a single first airfoil spanning said first pair of arms and rotatable angularly relative to said first pair of arms about a first airfoil axis parallel to the leading edge of the first airfoil,

a second pair of arms extending radially from said shaft in a direction and spaced apart by a distance less than the length of said shaft while being angularly offset about the axis of said shaft with respect to the first pair of arms, said second pair of arms bracketing a second section of said shaft axially offset from said first section,

a single second airfoil spanning said second pair of arms and being angularly displaceable relative thereto about a second airfoil axis parallel to the leading edge of said second airfoil, said first and second airfoils lying exclusively to opposite sides of a respective plane of the respective rotor parallel to the median plane and perpendicular to said shaft, said first and second airfoils being the exclusive airfoils along said first and second sections of said shaft; and

means for driving said shafts, thereby rotating said rotors so that each airfoil describes an orbit about the respective shaft axis free from encounter with a wake from any other airfoil of the respective motor.

4,210,300

POINT SWITCH

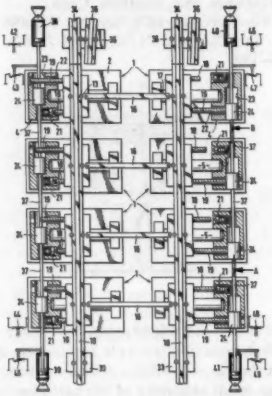
Bernd-Joachim Kempa, Berlin, Fed. Rep. of Germany, assignor to Elektro-Thermit GmbH., Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,750

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817782

Int. Cl.[2] E01B *7/08*

U.S. Cl. 246—430 **8 Claims**



1. In a point switch in which the switch blades or tongues are composed of rail sections of the trunk or main track and are displaceably positioned on slide chairs in the transverse rail direction,

the improvement comprising shaft means on which each slide chair is slidingly mounted between two bearing blocks, one of said bearing blocks being inside the track and the other of said bearing blocks being outside of the track,

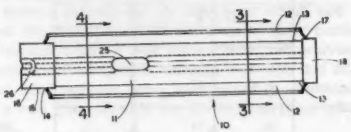
means rigidly connecting said bearing blocks with a joint base plate,

and two rod means on each chair parallel to said shaft means, a first one of said rod means being adapted to contact a stop means in a recess in said outside bearing block, and a second one of said rod means being adapted to contact a locking means in a recess in said outside bearing block,

whereby in an unlocked condition said first one of said rod means contacts said stop means, and in a locked condition

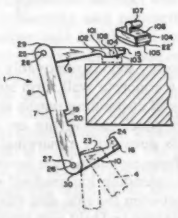
said second one of said rod means contacts said locking means.

4,210,301
EAVESTROUGH BRACKET
Jacob B. Weiss, 270 Bryden Rd., Kelowna, Bristish Columbia, Canada (V1X 3Y4)
Filed Aug. 16, 1978, Ser. No. 934,041
Int. Cl.[2] E04D *13/06*
U.S. Cl. 248—48.2 **5 Claims**



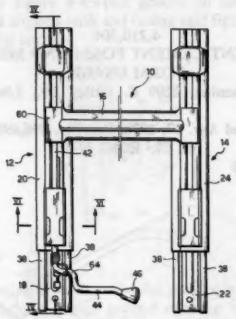
1. An eavestrough bracket for an eavestrough having an inwardly hooked outer marginal edge portion and an upwardly extending inner marginal edge portion comprising:
(a) a straight body portion adapted to extend across the eavestrough between said marginal edge portions,
(b) an upwardly hooked portion at one end of the body portion having a semi-circular bite for engaging in the inwardly hooked marginal edge portion of the eavestrough,
(c) an upstanding leg at an opposite end of the body portion for engaging the opposite marginal edge portion of the eavestrough, said upstanding leg having a nail receiving opening,
(d) a trough extending continuously from substantially the middle length of the bracket and upwardly along the leg and terminating at the opening therein for guiding a point of a nail along the body portion to the opening.

4,210,302
HANDBAG HOLDER
Alvin A. Serkez, Tappan, N.Y.
Filed Apr. 6, 1979, Ser. No. 27,888
Int. Cl.[2] A47F *5/00*
U.S. Cl. 248—308 **4 Claims**



1. In a holder for a bag having a strap, said holder being of the type including an elongate body; a support arm having one end pivotally secured to one end of said body for movement between a retracted position wherein said support arm is substantially aligned with said body and an extended position wherein said support arm extends away from said body and on one side thereof; and a hook arm pivotally secured to the other end of said body for movement between a retracted position wherein said hook arm is substantially aligned with said body and an extended position wherein said hook arm extends away from said body on said one side thereof, the improvement comprising:
the free end of said support arm having first and second surfaces in non-coplanar relation;
a base member having upper and lower surfaces; and
means for securing the free end of said support arm to said base member for movement between a first position wherein said first surface is seated on said upper surface and a second position wherein said second surface is seated on said upper surface.

4,210,303
SUPPORT AND GUIDE DEVICE FOR ADJUSTABLE VEHICLE SEATS
Franco Torta, Beinasco, and Mario Torta, Turin, both of Italy, assignors to Lifel di Torta Franco & C. s.a.s., Beinasco, Italy
Filed Apr. 26, 1978, Ser. No. 900,378
Claims priority, application Italy, Jun. 3, 1977, 68287 A/77
Int. Cl.[2] F16M *13/00*; B60N *1/02*
U.S. Cl. 248—429 **12 Claims**



12. In a support and guide device for an automobile adjustable seat, of the type including:
a pair of fixed guides adapted to be fixed to the floor of the vehicle, each said fixed guide comprising;
an elongate sheet metal element having a flattened generally U-shape cross section including:
a base portion,
two side arms projecting from said base portion,
outwardly directed flanges projecting from said side arms, said flanges extending at least part way along the length of said side arms;
a pair of movable guides adapted to be fixed to said automobile seat, each said movable guide comprising:
an elongate sheet metal element having a flattened generally U-shape cross section including,
a base portion,
two side arms projecting from said base portion, said side arms being formed with C-shape portions extending at least part way along their length, which C-shape portions surround said outwardly directed flanges of respective fixed guides in slidable relation thereto so that each fixed guide and the respective movable guide define an elongated space therebetween; and
latching means mounted on one of said movable guides and selectively engageable with one of said fixed guides whereby to permit or prevent relative sliding movement between said one fixed and said one movable guide, said latching means including:
a series of notches in said one fixed guide,
a shaft extending longitudinally of said one movable and said one fixed guides;
at least one tooth projecting from said shaft,
a control lever connected to said shaft by means of which it can be turned about its axis between a first position in which said at least one tooth is engaged in one of said notches in said one fixed guide to prevent relative sliding movement between said fixed and movable guide and a second position displaced from said notches permitting free relative sliding movement between said fixed and movable guides, and

resilient biasing means urging said shaft towards said first position thereof;

the improvement wherein said notches are formed as a series of windows in said base portion of said fixed guide spaced from the edge thereof, and

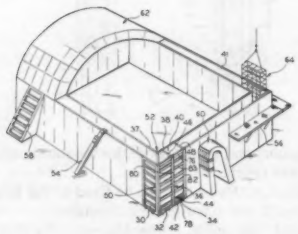
said shaft is pivotally supported on the base portion of said one movable guide, said at least one tooth projecting from said shaft into said space through an opening of the base portion of said one movable guide, so as to be disposed completely within said said space both when said shaft is in its first position and when said shaft is in its second position.

4,210,304

TRANSPARENT CEMENT FORM AND METHOD OF FORM USAGE

Rosario M. Mannina, 2209 E. Valley Dr., Lindenhurst, Ill. 60046

Filed Apr. 17, 1978, Ser. No. 896,698
Int. Cl.[2] E04G *11/02*
U.S. Cl. 249—22 **27 Claims**



1. A system for casting wet building cement comprising a plurality of lightweight form means, each of said means comprising a transparent panel having a smooth surface and separate frame means for surrounding said transparent panel for individually supporting and reinforcing around the edges of said panel and across the transparent surface; a plurality of connector means distributed throughout said frame means in order to enable said frames to be interconnected in any of many alternative configurations, said connector means comprises repeated uniform patterns of individual connection points, and means for assembling together a plurality of said frames by interconnecting corresponding frames connecting points on different forms in order to form a double wall enclosure for receiving wet building cement.

4,210,305

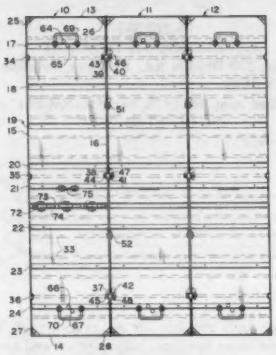
COMPOSITE FORMS FOR CONSTRUCTING CONCRETE WALLS

Chester I. Williams, 347 Greenbriar, SE., Grand Rapids, Mich. 49506

Filed Sep. 27, 1978, Ser. No. 946,436
Int. Cl.[2] E04G *11/06*
U.S. Cl. 249—191 **8 Claims**

1. A concrete wall-form unit having a marginal frame and panel means secured to said frame to provide a forming surface, said frame and panel having aligned marginal discontinuities for receiving fastening assemblies traversing said panel, wherein the improvement comprises:

a plurality of groups of positioning projections disposed on the opposite side of said units from said forming surface, said projections in said groups being positioned to interen-



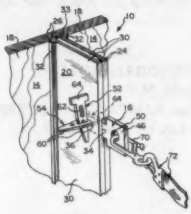
gage with said units in back-to-back relationship to establish the relative lateral position of said units.

4,210,306

SAFETY KEY AND LOCKING MEANS THEREFOR FOR USE WITH CONCRETE WALL FORM PANELS

Vernon R. Schimmel, Chicago, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed May 18, 1978, Ser. No. 907,138
Int. Cl.[2] E04G *11/06*
U.S. Cl. 249—196 **2 Claims**



1. A workman's safety device removably attachable in alternative positions to a concrete wall form side of the type that embodies a plurality of upstanding panels arranged in edge-to-edge relation, each panel embodying an inner facing from which there projects outwardly a marginal reinforcing frame including vertical frame members each having inner and outer, laterally outwardly extending longitudinal ribs and a flat web portion extending between the ribs, said ribs having notches at spaced centers therealong and said web portions having wedge bolt-receiving slots at spaced centers therealong and in horizontal alignment with respective notches, the frame members of adjacent panels being arranged in contiguity with the corresponding notches thereof disposed in registry and defining therebetween tie rod-receiving voids and the corresponding wedge bolt-receiving slots thereof disposed in pairs of opposed slots in horizontal alignment with respective voids, said device comprising an elongated shank portion and an integral head portion, said shank portion having a longitudinal slot therein sized to receive the shank portion of a wedge bolt therethrough, said head portion having an opening therein sized to receive the hook portion of a workman's safety belt therethrough, said shank portion of the device being sized for removable insertion of a distal end thereof in the alternative through an unused one of said voids or through an unused one of said pairs of web portion slots and having a length such that

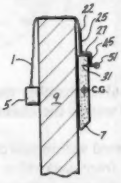
its distal end is confined between contiguous frame members when inserted through a void defined therebetween, said head portion being enlarged with respect to said shank portion of the device, said voids and said web portion slots, so as to prevent passage of the head portion through a void or a web portion slot, said slot in the shank portion of the device registering with one of said pairs of web portion slots when such shank portion is inserted through a void aligned with the one pair of slots, for receiving the shank portion of a wedge bolt through the registering slots, said slot in the shank portion of the device projecting outwardly from said frame members on the side thereof opposite to the side from which said head portion of the device projects when such shank portion is inserted through a pair of web portion slots, for receiving the shank portion of a wedge bolt through such slot, said integral shank and head portions being constructed to withstand the stress of a load transmitted to the device from the workman's safety belt.

4,210,307

PRE-FIXING HANGER FOR INSULATING SIDE BOARD

Stuart D. Kershner, Bethany, Conn., and Ken P. Smith, Warranwood,, Australia, assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 10, 1978, Ser. No. 922,933
Int. Cl.[2] B22D *7/10*
U.S. Cl. 249—202 **1 Claim**



1. A device for temporarily supporting a metallurgical side board in a predetermined position against a vertical surface of an ingot mold, said device comprising a spiked attachment member adapted for releasable impalement in a side board, a counterbalance body approximately equal in weight to the combination of said attachment member and a side board, and a flexible member connecting said counterbalance body and said attachment member, said attachment member including a pair of linear, transversely extending guide members providing visual cues facilitating placement of said attachment member along the longitudinal axis of a side board, the point of attachment of said flexible member to said attachment member is offset, relative to said guide members, whereby the device may be arranged such that a component of the gravitational force acting on an impaled side board urges the same against a vertical surface of a supporting ingot mold, said attachment member further comprising a handle portion, offset relative to said guide members on the side thereof opposite said point of attachment, and at least two spikes disposed perpendicular to the plane of said guide members, said spikes being adapted to be driven into a side board by pressure on said handle member.

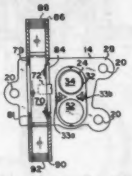
4,210,308

VALVE

James O. Sims, Rte. 2, Box 248, Hartselle, Ala. 35640

Filed Jul. 24, 1978, Ser. No. 927,499
Int. Cl.[2] F16K *3/02, 31/122*
U.S. Cl. 251—31 **9 Claims**

1. A valve comprising:
a valve body;
an elongated blade having opposite, generally flat, surfaces, and a discrete opening between said surfaces being positioned at a selected location along said blade;
a fluid inlet in said valve body;
a first flat surface in said valve body;
guide means for enabling said blade to move along said first flat surface in a predetermined path;
a groove in said first flat surface having a generally oval-shaped exterior edge, and a pair of generally o-shaped interior groove regions separated in part by the absence of a groove;
a first opening in said first flat surface interior of one of the "o" regions, and said opening extending through said first flat surface to said fluid inlet;
a fluid outlet in said valve body;
a second flat surface in said valve body positioned opposite said first flat surface, and between which said flat surfaces said blade is movably positioned;
an essentially figure 8-shaped groove in said second flat surface and aligned with and facing said figure 8 groove in said first flat surface;



a second opening in said second flat surface interior of one of the "o" regions, which second opening is opoosite said first opening, and said second opening extends through said second surface and connects to said fluid outlet;
first and second seals, each configured with an oval-shaped outer edge and a pair of spaced o-shaped regions and an open region between o-shaped regions to accommodate said non-groove regions, and thus each being adapted to fit within a said groove of one of said flat surfaces, and wherein at least one of the "o" regions of each seal has an opening through it; and
said blade being positionable and being engaged by and between said seal;
whereby the movement of said blade to a first position wherein the opening in said blade aligns with said first and second openings enables flow through said valve, and when said blade is moved in a position wherein the opening of said blade conforms to a position between "o's" in said seals wherein there is no such openings.

4,210,309

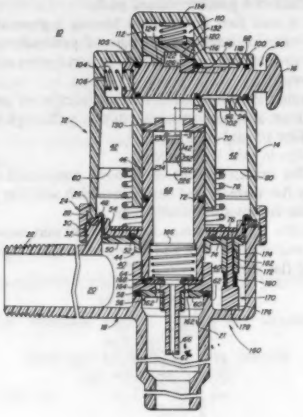
FLOW CONTROL MECHANISM FOR FLUSH VALVE

Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Rutland, Mass.

Continuation-in-part of Ser. No. 786,276, Apr. 11, 1977, abandoned. This application Aug. 9, 1978, Ser. No. 932,362
Int. Cl.[2] F16K *31/385*
U.S. Cl. 251—35 **8 Claims**

1. In a flush valve having a housing, a moveable partition sealingly engaging the housing and defining a primary chamber and a control chamber, an inlet port in the primary chamber and an outlet port in the primary chamber, a valve element connected with the partition for closing the outlet port, an actuator mechanism including an actuator valve for venting said control chamber and an actuator member for operating the actuator valve, the improvement comprising:
a flow control mechanism including an auxiliary chamber communicating with said control chamber through said actuator valve; a flow regulating outlet communicating with said outlet port and said auxiliary chamber for discharging fluid vented through said actuator valve; a flow regulating inlet in said auxiliary chamber for conducting into said auxiliary chamber, when said flush valve is open

and said valve element is separated from said outlet port, a portion of the fluid passing from said inlet port to said outlet port; and a unidirectional flow regulator valve for



permitting fluid flow through said flow regulating inlet into said auxiliary chamber but preventing fluid flow through said flow regulating inlet out of said auxiliary chamber.

4,210,310

FLUID CONTROL VALVES

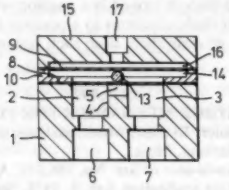
Francis X. Kay, The School House, Addington, Buckinghamshire, England

Filed May 30, 1978, Ser. No. 910,941

Claims priority, application United Kingdom, Nov. 28, 1977, 49465/77

Int. Cl.[2] F16K *31/126*

U.S. Cl. 251—61.1 **8 Claims**



1. In a sphincter valve which comprises a body defining at least two chambers, a seating spanning a fluid flow path joining said chambers, a control diaphragm deflectable into sealing engagement with said seating to control fluid flow in said path, an operating diaphragm spaced from, and of larger effective area than, said control diaphragm, the operating diaphragm being deflectable by operating fluid towards said control diaphragm, and a non-rigid thrust transmission element disposed between said diaphragms, the thrust transmission element having a face in contact with the control diaphragm: the improvement of the contact face of the thrust transmission element having a configuration conforming solely to the configuration of said seating and being deflectable by the operating diaphragm to deflect the control diaphragm into said sealing engagement.

4,210,311

VALVES

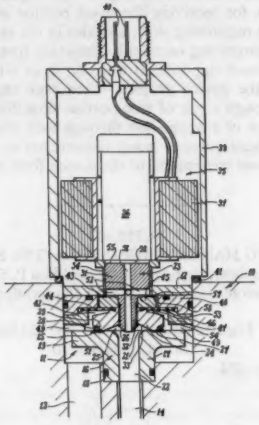
Alan M. Stone, Greensborough, Australia, assignor to Sphere Investments Limited, Nassau, The Bahamas

Filed Nov. 2, 1977, Ser. No. 847,940

Claims priority, application Australia, Nov. 11, 1976, 8090

Int. Cl.[2] F16K *31/06, 25/00*

U.S. Cl. 251—129 **11 Claims**



1. A valve including:

a housing having a valve chamber therein;

an annular valve seat within the chamber and surrounding a valve orifice;

a valve member mounted within said chamber for movement towards and away from said valve seat;

a flexible annular diaphragm connected between the valve member and the housing within the valve chamber so as to divide that chamber into a first compartment containing said valve orfice and a second compartment remote from said valve orifice;

a fluid inlet passage connecting with said first compartment;

a fluid outlet passage capable of communication with said first compartment through said orifice when the valve is in an open condition;

said valve member being engagable with said valve seat in a closed condition of the valve to block said communication between said first compartment and the outlet passage through said orifice;

actuating means for moving said valve member from closed to open position and for holding said valve member in open position;

said valve member and the diaphragm having opposed surfaces exposed to the pressure of fluid within said inlet passage and said first compartment such that the influence of inlet pressure on said surface of the diaphragm produces a force on the valve member in a direction away from the valve seat and the influence of inlet pressure on said surface of the valve member produces a force on the valve member in a direction toward the valve seat, the effective area of said diaphragm surface being slightly less than the effective area of said valve member surface whereby said forces are substantially counterbalanced but for a small biasing force urging the valve member toward said valve seat;

said valve member and said valve seat having facing surfaces, the facing surface of said valve member having an annular recess formed therein which slopes conically away from the facing surface of said valve seat in the radially inward direction to provide therebetween an annular passage which diverges radially inwardly of the valve seat such that, when the valve is open, fluid flowing

from said first compartment to said outlet passage between said facing surfaces creates a low pressure region between those surfaces, whereby movement of said valve member toward the valve seat is facilitated during closing of the valve; and

passage means allowing communication between said outlet passage and said second compartment, said valve member and the flexible diaphragm having surfaces within the second compartment exposed to outlet pressure, the effective areas of said last named surfaces being such that the influence of outlet pressure thereon counterbalances the influence of the outlet pressure on the valve member at the valve seat.

4,210,312

VALVE USING FLEXIBLE ELEMENT

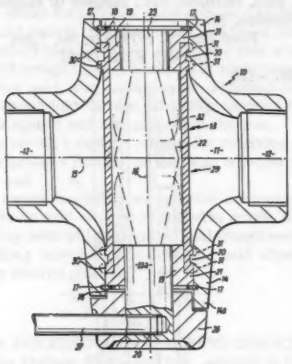
Geoffrey Hanson, Doncaster, England, assignor to Pegler Hattersley Limited, Doncaster, England

Continuation-in-part of Ser. No. 750,881, Dec. 15, 1976, abandoned. This application Mar. 15, 1978, Ser. No. 887,744

Claims priority, application United Kingdom, Dec. 19, 1975, 52204/75

Int. Cl.[2] F16K *31/524*

U.S. Cl. 251—258 **12 Claims**



1. A valve comprising:

(a) a valve housing having portions defining an inlet, an outlet, and a passageway connecting the inlet and the outlet;

(b) a control member positioned in said passageway for movement between a first position in which fluid is able to flow through said passageway and a second position in which said control member blocks fluid flow through said passageway, said control member comprising:

(1) a first relatively rigid member having interconnected continuous opposed surfaces, and

(2) a second relatively flexible member having portions thereof in continuous resilient engagement with the continuous opposed surfaces of said first member, the continuously engaged portions of said second member including generally diamond-shaped reinforced portions positioned in such manner that the width of the reinforced portions is greatest in the vicinity of a central portion of the second member and decreases from the central portion towards each end of the second member, said first member being so positioned in said passageway that movement of said control member from said first to said second position moves said first member thereby changing the contour of said second member and urging the reinforced portions of said second member into engagement with portions of said housing defining said passageway; and

(c) means connected to said first member of said control member for moving said control member between said first and said second positions so that said control member performs a valve control function.

4,210,313

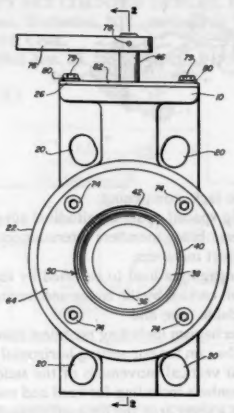
PRESSURE ACTUATED RESILIENT VALVE SEAL

Arnold M. Chester, West Hartford, Conn., assignor to Litton Industrial Products, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 385,571, Aug. 3, 1973, abandoned. This application May 5, 1975, Ser. No. 574,570

Int. Cl.[2] F16K *1/22*

U.S. Cl. 251—306 **4 Claims**



1. A valve comprising

a closure member including an annular peripheral substantially flat sealing surface,

a supporting shaft fixedly secured to opposing sides of closure member,

a housing including a cylindrical flow passage and means for rotatably supporting said closure member supporting shaft,

means for rotating said closure member from a first position whereat said flow passage is open to a second position whereat said flow passage is closed,

an annular substantially flat valve seat including an annular sealing surface,

said housing further including an annular valve seat receiving channel selectively configured to support said annular valve seat for mating engagement with said closure member sealing surface when said closure member is at said closed position and the valve seat is at the neutral or low pressure position,

said valve seat including a recessed portion on one side thereof with a first annular groove extending axially into said valve seat from said recessed portion, and

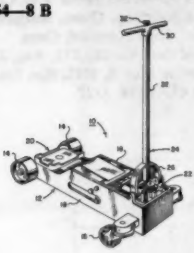
a second annular groove extending axially into the other side of said valve seat, said second groove dividing said other valve seat into upper and lower portions, said first annular groove-being located in said upper portion,

the side of said receiving channel adjacent to the other side of said valve seat being spaced from the lower most part of said upper portion and being selectively inclined relative thereto when the valve seat is in the neutral position, to establish a spacing therebetween which linearly increases towards the uppermost part of said upper portion to permit selected rotation of said valve seat, the annular closure member sealing surface extending incrementally radially outwardly from the one side to the other side of the valve seat.

4,210,314
HYDRAULIC JACK

Herbert J. Carroll, 7729 Alto Caro Dr., Dallas, Tex. 75248, and Thomas C. Davis, Sr., 11214 Carissa Dr., Dallas, Tex. 75218

Filed Sep. 29, 1978, Ser. No. 946,951
Int. Cl.[2] B66F 5/04
U.S. Cl. 254—8 B 17 Claims



1. A hydraulic jack, comprising:

a frame having spaced apart longitudinal support members and transverse brace members interconnecting the longitudinal support members;

a saddle for engaging a load to be lifted by the jack;

a hydraulic unit carried by the frame and having a longitudinally extendable ram; and

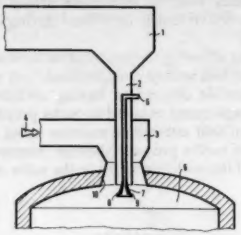
an elevator mechanism including members intercoupling the saddle and the ram for converting horizontal movement of the ram into vertical movement of the saddle, the intercoupling members including forward and rearward elevator arms and a lever arm, the forward elevator arm having a first end pivotally secured in the frame and a second end rotatable about its first end, the rearward elevator arm having a first end longitudinally movable in the frame and a second end pivotally secured to the forward elevator arm at a point removed from the first end of the forward elevator arm, the first end of the rearward elevator arm being cooperatively intercoupled with the ram, the lever arm having a first end pivotally secured in the frame and a second end rotatable about its first end, the second end of the lever arm being cooperatively intercoupled with the saddle, the elevator mechanism further including a roller for intercoupling the forward elevator arm and the lever arm to translate vertical movement of the second end of the forward elevator arm into corresponding vertical movement of the saddle, the roller being journaled at the second end of the forward elevator arm for engaging a surface of the lever arm, whereby the lifting force of the jack is transferred from the ram to the saddle via the elevator arms, the roller and the lever arm.

4,210,315
MEANS FOR PRODUCING A SUSPENSION OF A POWDERY SUBSTANCE AND A REACTION GAS

Launo L. Lilja, and Valto J. Makitalo, both of Pori, Finland, assignors to Outokumpu Oy, Finland

Division of Ser. No. 797,505, May 16, 1977, Pat. No. 4,147,535.
This application Nov. 16, 1978, Ser. No. 961,226
Int. Cl.[2] F27B 1/20
U.S. Cl. 266—182 8 Claims

1. An apparatus for forming a suspension of a powdery substance and a reaction gas, comprising a first supply tube for the powdery substance adapted to be inserted through the reaction gas entrance aperture in the upper part of a reaction chamber and directed downwardly into the reaction chamber, a second supply pipe for the gas and, extending centrally downwardly from the first supply tube, at least one sliding surface projecting gradually outwardly from its central axis, the terminal edge of which is substantially horizontal, further comprising, below the terminal edge of the sliding surface, one or several substantially horizontally directed apertures for

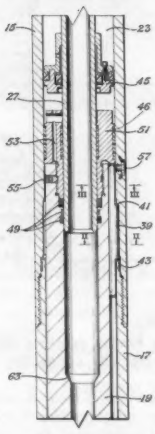


injecting dispersion gas jets into the flow of powdery substance discharging from the sliding surface.

4,210,316
DRILL STRING SHOCK ABSORBER WITH IMPROVED PIN TYPE TORQUE TRANSMISSION MEANS

James R. Hall, Huffman, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jan. 29, 1979, Ser. No. 7,264
Int. Cl.[2] E21B 17/02
U.S. Cl. 267—125 10 Claims



1. In a shock absorbing apparatus for use in a drill string, including a tubular body adapted to be secured to a drill string member; a mandrel reciprocably mounted to the tubular body for rotation therewith and having a portion adapted to be secured to another drill string member, the mandrel being shaped such that it sealingly engages the body; drilling fluid passage means within the tubular body and the mandrel for passage of drilling fluid; and a sealed chamber between the tubular body and the mandrel, containing pressurized fluid for absorbing load and shock; the improvement which comprises:

a. a plurality of longitudinal grooves on the exterior surface of the mandrel;

b. a plurality of longitudinal grooves on the interior surface of the tubular body mating with the mandrel grooves to form cavities;

c. pins inserted within the cavities for torque transmission; and

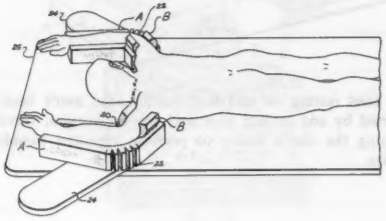
d. means to prevent rotation of the pins within the cavities to provide improved wearing characteristics of the pins.

4,210,317

APPARATUS FOR SUPPORTING AND POSITIONING THE ARM AND SHOULDER

Donald C. Spann, 5 Ferncreek Ct., Greenville, S.C. 30067, and Dorothy Sherry, 3135 Indian Hills Dr., Marietta, Ga. 30067

Filed May 1, 1979, Ser. No. 34,962
Int. Cl.[2] A61G *13/00*
U.S. Cl. 269—328 **12 Claims**



1. Apparatus for positioning the extremities of a patient placed in a prone position on an operating table during laminectomy and the like procedures comprising:

arm cradle means for properly supporting and positioning an arm of said patient including elongated block means having a support base for stably supporting said arm cradle;

an elongated trough formed in said block means cradling and positioning said arm including an enlarged contoured weight supporting surface affording reduced force per unit area against said arm supported thereon;

cuff means having a support portion for receiving and resiliently gripping a portion of said arm adjacent the axilla thereof; and

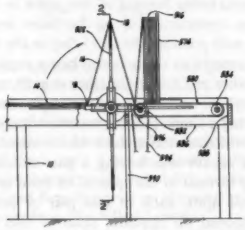
said cuff means including an exterior contoured surface receivable in said trough of said arm cradle means and interfacing with said countour of said trough surface in an interlocking manner for maintaining said shoulder in a properly rotated position.

4,210,318

FAN FOLDING AND STACKING DEVICE

Hubert R. Ver Mehren, Florissant, Mo., assignor to Ga-Vehren Engineering Company, St. Louis, Mo.

Filed May 24, 1978, Ser. No. 909,020
Int. Cl.[2] B65H *45/20*
U.S. Cl. 270—79 **12 Claims**



1. A device for fan-folding and stacking a continuous elongate web of the type which is separated lengthwise into a plurality of connected sections by transverse separation lines, the device comprising:

(a) support means having a longitudinal axis and opposed sides and including means for conveying the web longitudinally along the support means,

(b) rotatable means including a plurality of radial arm means mounted to the support means for rotation about an axis transverse to the longitudinal axis of the support means, said arm means being movable transversely relative to said longitudinal axis into and out of engagement with the web,

(c) actuating means carried by the support means and engageable with the rotatable means for selectively moving said arm means into engagement with the web to fold the web and out of engagement with the web to release the web, and

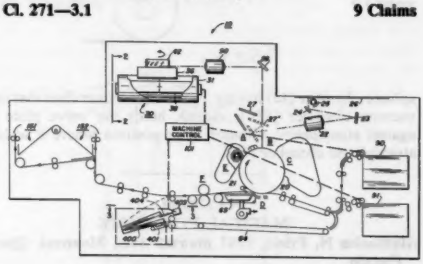
(d) drive means operatively connected in drive relation to said rotatable means.

4,210,319

COPY SET COUNTER DUPLEX TRAY

Frank R. Hynes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 28, 1978, Ser. No. 919,892
Int. Cl.[2] B65H *1/24*
U.S. Cl. 271—3.1 **9 Claims**



1. A duplex copying system for detecting copy sheet misfeeds comprising:

(a) processing means for placing page images on one side of copy sheets;

(b) stationary duplex copy set tray means for receiving the copy sheets and feeding the copy sheets therefrom;

(c) set separator means located within said tray means for separating multiple copy sheet sets, said set separator means adapted for movement between nonretracted and retracted positions; and

(d) machine control means for counting the number of one-sided copies entering said duplex tray and the number of one-sided copies exiting the duplex tray and retracting said separator fingers when there is coincidence between the number of copies entering the duplex tray and the number of copies exiting the duplex tray to allow additional sheets to fall into feeding position in said duplex tray.

4,210,320

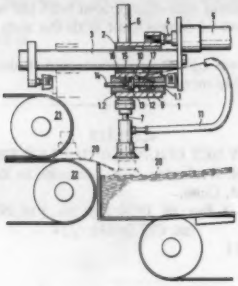
VACUUM CONTROL FOR SHEET APPLICATOR MACHINES

Richard Feldkämper, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,880
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802475
Int. Cl.[2] B65H *3/08*
U.S. Cl. 271—108 **2 Claims**

1. A vacuum control for sheet applicator machines, particularly for the base formers of bag-making machines, comprising suckers which lift the sheets individually, have a reciprocating conveying motion and are connected to a vacuum source by way of a controlled three-way valve, characterised in that the three-way valve (1) comprises a chamber (15) communicating with the atmosphere and a chamber (12) communicating with the vacuum source, the chambers being alternately connected to a conduit (10, 11) leading to the suckers (8) by means of a valve plate (13) which is displaceable between the chambers (15, 12) to close one of them and which is controlled by the

reciprocating conveying motion of the suckers (8), and that the valve plate 13 is biassed by a spring (17) which cannot overcome the suction acting on the valve plate (13) when the vacuum chamber (12) is closed and which, when the atmo-



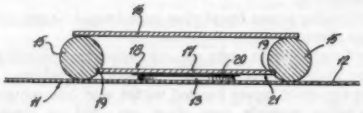
spheric chamber (15) having a smaller diameter than that of the vacuum chamber (12) is closed, holds the valve plate (13) against atmospheric pressure in its position where it seals the atmospheric chamber (15).

4,210,321

MAGICAL-TYPE GAME

Athanasios N. Ptinis, 7747 Stewart Ave., Montreal, Quebec, Canada

Filed Oct. 19, 1978, Ser. No. 952,728
Int. Cl.[2] A63J *21/00*
U.S. Cl. 272—8 N 5 Claims



1. A game to create a vanishing illusion of an article, said game comprising a background element having a plain outer surface of uniform color, an article of contrasting color disposable on said background element, a displaceable ring member having a bore and movable within the boundaries of said background element ,said ring further having a diaphragm secured across said circular bore in an annular groove disposed on an inner circumferential portion of said ring member lowermost of the central plane of said ring passing through the center of the circular cross-section of said ring, and spaced from the outer lower plane of said ring whereby an angulated inner periphery of the ring is visible from above the ring below said central plane having a front surface of substantially identical uniform color as said background element, and a cover of contrasting color to said background element and configured to be removably positioned on said displaceable member to fully cover said diaphragm.

4,210,322

PORTABLE TUMBLING MAT

Michael E. Pritchard, Brook Rd., Freelton, Ontario, Canada

Filed Oct. 3, 1977, Ser. No. 838,893
Int. Cl.[2] A63B *5/18*
U.S. Cl. 272—109 5 Claims

4. A portable tumbling mat comprising a first portion and a second portion, integral with one another; said portions being constructed from a soft resilient material, said first portion being provided on its upper surface with a pair of hand grips comprising cut-away indentations for clamping engagement with the user's hands for performing repeated tumbling exercises, said second portion constituting a major share of said mat being thickened and relative to said first portion; the arrangement being such that when a person is lying in a supine position on said mat with the user's hands engaging said hand grips and with the user's hands engaging said hand grips, and with the

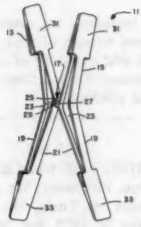
user's head resting on said first portion, the user's back is supported by and arched over said second portion, thereby enhancing the user's ability to perform repeated tumbling exercises.

4,210,323

BODY ENGAGING EXERCISING DEVICE

Jack V. Feather, P.O. Box 1399, Pebble Beach, Calif. 93953

Filed May 18, 1978, Ser. No. 907,098
Int. Cl.[2] A63B *21/32*
U.S. Cl. 272—137 6 Claims



1. A body engaging exercising device comprising

a pair of bent rocker arms of equal length, each of said rocker arms being formed of one piece in cross section in an I-beam construction along the entire length of the arm with the web portions thereof lying in the same plane and the flange portions of each arm being angled with respect to each other and joined together at each end, each rocker arm being bent to form an obtuse angle, one of said rocker arms having a single bearing member integrally formed to the apex of its bend in a plane which bisects said apex and the other rocker arm having a pair of bearing members integrally formed to the apex of its bend in a plane which bisects said apex, each of said pair of bearing members being disposed on opposite sides of said single bearing member of the first rocker arm, said bearing members being interlocked at the pivot point by a pivot pin which is journalled in the bearing blocks, said pivot point being disposed between one-tenth and one-twentieth the length of the rocker arms from the center thereof, and

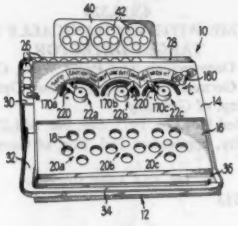
body engaging surfaces disposed on at least one pair of rocker arm ends and integrally secured thereto, said body engaging surfaces being generally planar and formed to contact the hands or inner thighs of the user, the planes of said body engaging surfaces being generally perpendicular to the plane of actuation of the rocker arms.

4,210,324

TIMER CONTROLLED GAME APPARATUS

Howard J. Morrison, Deerfield, and John R. Wildman, North Riverside, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,407
Int. Cl.[2] A63F *7/00*
U.S. Cl. 273—1 R **20 Claims**



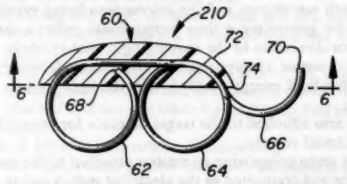
8. A game apparatus, comprising:
a frame having means defining a playing piece path of travel;
a plurality of playing pieces;
release means for sequentially releasing playing objects onto said playing piece path of travel;
a depository array including a plurality of array subsets whereby the playing pieces can be manually moved from the path of travel into the depository array subsets; and
a playing piece ejection means for each of said depository array subsets.

4,210,325

CUE GUIDE APPARATUS

Arthur T. McCann, P.O. Box 6368, Odessa, Tex. 79762

Filed May 16, 1978, Ser. No. 906,690
Int. Cl.[2] A63D *15/10*
U.S. Cl. 273—24 **4 Claims**



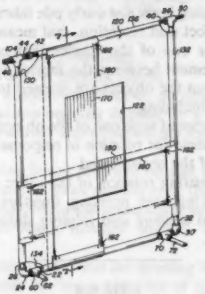
4. A cue guide apparatus having a cue guide member and spaced, adjacent, finger-receiving members;
a bridge member connecting said finger-receiving members and said cue guide member together such that when the apparatus is placed about the first and second fingers of one's hand, and one's hand is placed palm down on a billiard table, the cue guide member is positioned between the thumb and first finger in an elevated position respective to the surface of a billiard table;
said cue guide member having a curved surface which supports a cue stick such that the stick can be slidably reciprocated respective thereto;
said bridge member, said finger-receiving members, and said cue guide member being fabricated from a single continuous length of bent material;
an ornamental member rigidly attached to said bridge member and said finger receiving members, said ornamental member having a lower substantially planar surface of greater transverse dimension than said bridge and finger receiving members for increasing the area of contact across the top of the fingers when said cue guide is affixed to one's fingers, said ornamental member further having an upper curved surface, a marginal edge portion of said curved surface extending into overlying relationship respective to a marginal edge portion of said cue guide member so that a cue stick when placed in said cue guide member is simultaneously contacted by said ornamental member and said cue guide member.

4,210,326

PORTABLE BASEBALL PITCHING TARGET AND CATCHING APPARATUS

John A. Booth, 505 E. Winchcomb, Scottsdale, Ariz. 85254, and Jess H. Ingle, 6019 N. 36th Dr., Phoenix, Ariz. 85019

Filed Jun. 29, 1978, Ser. No. 920,169
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—26 A **9 Claims**

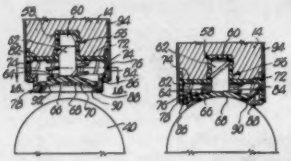


1. Pitching target apparatus, comprising, in combination:
front frame means, including
a generally horizontally disposed upper frame member,
a generally horizontally disposed lower front frame member spaced apart from the upper frame member,
a first front side frame member and a second front side frame member spaced apart from each other and connected to the upper and lower frame members, with the upper, lower, first side, and second side frame members defining a generally rectangular front frame;
bottom frame means comprising a base for the apparatus, including
a generally horizontally disposed rear frame member spaced apart from and generally parallel to the lower frame member,
a first lower side frame member secured to the lower front frame member and to the rear frame member,
a second lower side frame member secured to the lower front frame member and to the rear frame member, and spaced apart from the first lower side frame member;
diagonal frame means for supporting the front frame on the base, including
a first diagonal frame member extending between and secured to the upper frame member and the rear frame member,
a second diagonal frame member extending between and secured to the upper frame member and the rear frame member and spaced apart from the first diagonal frame member;
target panel means secured to the front frame means and including an aperture extending through the target panel means defining a target, including strip means for varying the size of the aperture; and
net means spaced apart from the target panel means for stopping projectiles thrown through the aperture in the target panel means.

4,210,327
RACKET-MOUNTED TENNIS BALL RETRIEVER

Steven M. Schubert, 3629 Warwick, Kansas City, Mo. 64111

Filed May 15, 1978, Ser. No. 906,126
Int. Cl.[2] A63B 69/38
U.S. Cl. 273—73 R 15 Claims



1. Means for the improved retention of a pair of objects, wherein interlocking hook and curly pile fabrics are utilized on the objects to effect said retention, said means comprising:

a mounting for one of the fabrics that produces relative sliding movement between the fabrics so as to interlock the same when the objects are pressed together,

said mounting including:

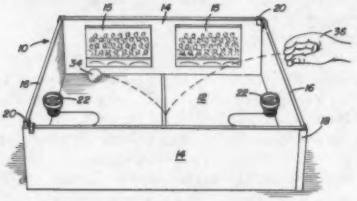
a device associated with one of the objects and supporting said one fabric for rotation in response to said pressing together of the objects; and

means for resisting rotation of the other object with said device during said pressing together of the objects whereby to achieve said relative sliding movement of the fabrics.

4,210,328
TABLE-TOP BASKETBALL GAME

Eddie R. Meintzer, 4520 Carlisle NE., Albuquerque, N. Mex. 87109; Paul M. Inglat, 10904 Rio Puerco SW., Albuquerque, N. Mex. 87105, and Zenon J. Zamora, 1008 Broadway SE., Albuquerque, N. Mex. 87102

Continuation-in-part of Ser. No. 834,339, Sep. 19, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,750
Int. Cl.[2] A63F 7/06
U.S. Cl. 273—85 R 3 Claims



1. A game apparaus of the type wherein a ball is thrown toward a target area comprising:

a game board having a planar configuration with a smooth hard surface;

end walls for perpendicular orientation to the ends of the game board each of said end walls being of constant height;

side walls for perpendicular orientation to the sides of the game board each of said side walls being of constant height, said side walls and said end walls being of equal height;

a hoop mounted on each end wall for disposition over the game board;

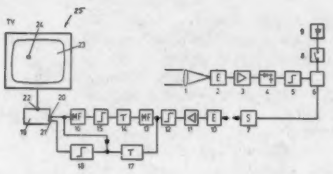
a resilient ball for bounding off the game board and walls and passing through the hoops; and

wherein one end wall and one side wall are hingedly interconnected for folding the side-by-side relation for storage and to perpendicular relation to be positioned alongside the side and end edge of the game board, and clip means comprising a right angle clip engaging the ends of an end wall and side wall remote from the hinged connection to retain the side and end walls in upstanding peripherally encircling relation to the game board to provide surfaces from which the ball may be banked through the hoops.

4,210,329
VIDEOGAME WITH MECHANICALLY DISJOINT TARGET DETECTOR

Klaus Steiger, Unterrodach, and Peter Wahl, Coburg, both of Fed. Rep. of Germany, assignors to Loewe-Opta GmbH, Kronach, Fed. Rep. of Germany

Filed Nov. 23, 1977, Ser. No. 854,229
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653113
Int. Cl.[2] A63F 9/02
U.S. Cl. 273—313 13 Claims



1. A videogame comprising:

a television receiver

a circuit for generating one or more movable light spot symbols on a line scanned screen of the television receiver;

an oscillator for generating horizontal synchronizing signals;

an oscillator for generating vertical synchronizing signals;

switching means for bright illumination and scanning of a predetermined intersection of horizontal and vertical sawtooth waveforms and the intersection being synchronized for generating a time proportional pulse; a target detector directable to the moving light spot symbol;

an optical sensor incorporated in the target detector for receiving light energy emitted from the light spot on the screen;

a trigger arm attached to the target detector for controlling an electrical switch;

an output stage comprising an emitter attached to the target detector and connected to the electrical switch and to the optical sensor for emitting unmodulated signals for a direction missing shot and modulated signals for a hit and a wireless transmission means for sending the signals from the emitter;

an input stage for receiving signals sent by the output stage;

an amplification stage for amplifying the signals coming from the input stage;

a pulse converter stage connected to the amplification stage for generating a pulse of a first duration for an incoming modulated signal and of a second duration different from the first duration for an incoming unmodulated signal;

a coincidence gate for receiving the pulses;

a summation circuit receiving the output signals of the coincidence gate and synchronizing them with the synchronizing and output signals of additional coincidence gates; and

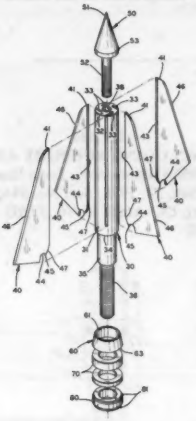
a counting and display stage connected to the television receiver for counting the shots when the trigger arm is actuated and for counting the hits when there is a coincidence in time between the actuation of the trigger arm and the entering of light energy on the optical sensor coming from the light spot on the screen and for displaying the results thereof on said television receiver.

4,210,330

MODULAR BROADHEAD ARROWHEAD

John V. Kosbab, Toledo, Ohio, assignor to Dynamic Sports concepts, Inc., Toledo, Ohio

Filed Feb. 13, 1978, Ser. No. 877,327
Int. Cl.[2] F41B 5/02
U.S. Cl. 273—106.5 B 31 Claims



1. A broadhead arrowhead comprising:
(A) a central shaft portion having at least one axially extending slot in a plane spaced radially from and parallel to the axis of said shaft portion,
(B) a device seatable in said slot having a notch at its rear end, and
(C) a deformable washer fitable in said notch for anchoring and locking the rear end of said device in said slot.

20. A broadhead arrowhead comprising:
(A) a central shaft portion having at least one axially extending slot open at its forward end,
(B) a bendable blade seatable in said slot and having a forward end extending out of said forward end of said slot, and
(C) tip means having an annular groove for engaging and bending said forward end of said blade out of the common plane of said slot and blade for anchoring said blade in said slot.

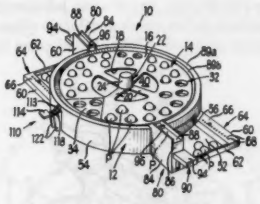
31. A broadhead arrowhead comprising:
(A) a central shaft portion externally threaded at its rear end for threading into an arrow shaft, internally threaded at its forward end, and having a plurality of axially extending slots in planes spaced equal radial distances from the axis of said shaft substantially along the central portion of said shaft portion,
(B) a plurality of blades seatable in said slots having acute angled projections at each end in said blades,
(C) a tip having an annular groove and threaded extension at its rear end for threading into the internal threaded forward end of said shaft portion whereby the front acute angled projections of said blades are anchored in said annular groove,
(D) a deformable annular collar axially slidably mounted around the rear end of said shaft portion overlapping the rear acute angled ends of said blades to anchor their rear ends in said slots, and
(E) a resilient locking washer axially slidably mounted between said collar and the front end of the arrow shaft for permitting angular adjustment of said blades with respect to said arrow shaft while the collar is axially urged into deformable contact with the rear of said blades by the threading of said externally threaded rear portion of said shaft portion into the front end of said arrow shaft.

4,210,331

ROTATABLE TARGET GAME

Ralph J. Kulesza, Chicago; John R. Wildman, N. Riverside; Henry Arias, Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,413
Int. Cl.[2] A63D 3/02; A63F 7/10
U.S. Cl. 273—120 R 2 Claims



2. A game apparatus comprising:
a plurality of rollable playing pieces;
a base having a horizontal bottom, an upstanding side wall and a central top opening defined by a peripheral flange extending inwardly and downwardly from the top of said side wall;
a circular playing board mounted on said base and having a central hub and an outer annular area, the outer peripheral portion of which extends underneath said flange and said annular area being inclined slightly downwardly and centrally;
means connected to said hub for rotating the playing board;
said annular area having a plurality of spaced receptacles constituting playing piece retention positions to receive and removably retain playing pieces entering them;
a pair of playing piece launching stations located on the base at the exterior of said side wall and including receiving channels for directing playing pieces onto said annular area for possible retention in said receptacles;
selectively operable control means at each launching station normally preventing launching of a playing piece and a depressible control lever for launching a playing piece;
a pair of playing piece holding chambers at the exterior of said side wall, one adjacent each launching station;
gathering means underneath said playing board for receiving playing pieces and contoured to guide them to said holding chambers;
scoring areas adjacent said holding chambers; and
stop means to selectively stop rotation of the board.

4,210,332

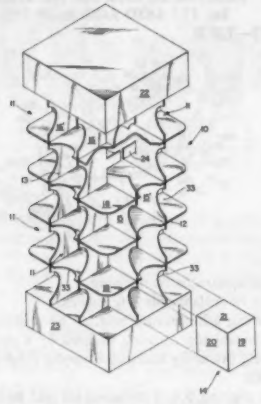
PUZZLE DEVICE INCLUDING POLYHEDRONS AND SUPPORT STRUCTURE THEREFOR

Steven R. Shanin, 6460 N. Lincoln Ave., Highland Park, Ill. 60645

Filed Jul. 24, 1978, Ser. No. 927,002
Int. Cl.[2] A63F 9/12
U.S. Cl. 273—157 R 16 Claims

1. A puzzle device comprising: a support structure, said support structure comprising a plurality of individual compartments located at the outer surface of said support structure, the compartments being adjacent to one another, and being open and unobstructed at the outer surface of said support structure to permit insertion into and removal from each compartment of a polyhedron, each compartment comprising wall means for separating adjacent compartments from one another and for supporting respective polyhedrons therein, said support structure including a central space equivalent to the space of at least one of said compartments; and a plurality of polyhedrons equal in number to the number of said surface compartments, each polyhedron having a size and shape such that each is insertable into a respective compartment such that, on inserting the poly-

hedrons into said compartments, the outer faces of said polyhedrons together form an outer surface of said support structure, each polyhedron having a plurality of faces and having different visual characteristics, the polyhedrons being arrangeable in said support structure in a plurality of arrangements in each of which at least one face of each polyhedron is visible at an outer



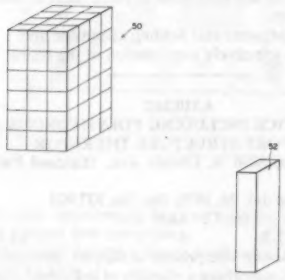
surface of said support structure in each of said arrangements, and in each of which the outer faces of the polyhedrons together form a pre-determined visual effect at said outer surfce of the support structure, each face of each polyhedron being useful in only one arrangement to form a pre-determined visual effect, all faces of all polyhedrons being used once to form said plurality of arrangements.

4,210,333

PUZZLE CUBES FOR FORMING RECTANGULAR PARALLELEPIPEDS

Steven R. Shanin, 6460 N. Lincoln Ave., Highland Park, Ill. 60645

Filed Jul. 24, 1978, Ser. No. 927,003
Int. Cl.[2] A63F *9/12*
U.S. Cl. 273—157 R **2 Claims**



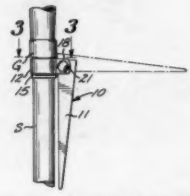
1. A puzzle device consisting of sixty two cubes, each cube having visual matter on a plurality of its faces, the cubes being arrangeable, using all sixty two cubes, in two different predetermined ways into a first rectangular parallelepiped six cubes high by three cubes wide by four cubes deep with the exposed cube faces forming the sides and top of the parallelepiped, and arrangeable, using sixty of the cubes, into two still different pre-determined ways into a second parallelepiped four cubes high by three cubes wide by six cubes deep with the exposed cube faces forming the sides and top of the parallelepiped, each cube being unique in the visual matter on its faces, with respect to all other cubes, the visual format on said cubes being such that in each of said pre-determined arrangements, the exposed faces of the cubes together form a pre-determined visual format on the five sides of the parallelepiped, whereby twenty different pre-determined visual formats may be provided, one on each of the five sides of the rectangular parallelepiped formed by arrangement of the cubes.

4,210,334

GOLF CLUB INCLUDING SUPPORT ATTACHMENT

William F. Lind, 5958 Gaviota Ave., Long Beach, Calif. 90805

Filed Sep. 22, 1978, Ser. No. 944,755
Int. Cl.[2] A63B *55/10, 53/00*
U.S. Cl. 273—162 R **1 Claim**



1. In combination with a golf club that includes a head having a flat striking surface, a shaft that has first and second ends, said first end of said shaft secured to said head, and a grip that envelops a portion of said shaft that extends inwardly from said second end thereof, a device for maintaining said grip above the ground surface when said club is angularly positioned relative to the latter and said flat striking surface resting on said ground surface, said device including:

a. a trianglar spike having a short edge joined to a long edge at substantially orthogonal alignment;

b. a resilient sleeve mounted on said shaft adjacent an inwardly disposed end of said grip, said sleeve including a peripheral bead around the distal periphery thereof;

c. a circular clamp mounted on said sleeve and disposed between said head and said grip, said clamp including a strip that substantially encircles said sleeve, said strip including a pair of laterally spaced end tabs that extend outwardly from said shaft and substantially normal to said striking surface, said pair of tabs having axially aligned first openings therein that are aligned with a second opening in said spike when an end portion of said spike in which said second opening is formed is disposed between said pair of tabs;

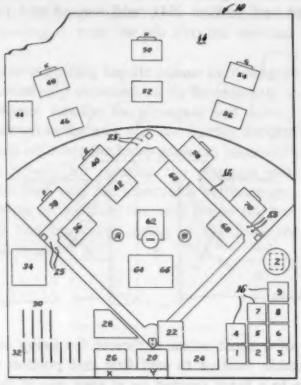
d. a screw that extends through said first and second openings, said screw including a head in abutting contact with one of said tabs, and a threaded shank that projects outwardly from the other of said tabs; and

e. a nut that engages said threaded shank and pressure contacts the one of said tabs most adjacent thereto when said screw is tightened, with said screw when tightened applying pressure through said clamp to said sleeve to maintain it in a fixed longitudinal position on said shaft, and also forcing said pair of tabs into frictional contact with said spike to the extent said spike may be pivoted to a first position substantially parallel to said shaft when said spike is not in use or to a second position substantially normal to said shaft where it will support said grip above the ground surface when the outer extremity of said spike is in contact with the latter and said striking surface rests on said ground surface.

4,210,335
BASEBALL GAME

Bartholomew A. Licciardi, 11 B. Whittier Dr., Everett, Mass. 02149

Filed Jul. 28, 1977, Ser. No. 819,719
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—238 7 Claims



1. A baseball game comprising:

(a) a game board having a baseball field design thereon and specifically marked areas at positions corresponding to the infield and outfield defensive positions of first base, second base, shortstop, third base, left field, center field and right field of an actual baseball field for placing defensive playing cards face down and another specifically marked area at each of the said positions for placing defensive playing cards face-up;

(b) three decks of cards, each deck containing a number of cards, including a pitcher's deck with each of a plurality of the pitcher's deck cards having a different indicia thereon and includes a separate strike card for each of said infield and outfield defensive gameboard positions and the indicia on each of said plurality of pitcher's deck cards corresponds to the associated one of said gameboard positions, a batter's deck with each of the batter's deck cards having different indicia thereon, the indicia on each of said batter's deck cards corresponds to the indicia on one of said plurality of pitcher's deck cards and includes a separate batter's deck card for each of said infield and outfield defensive gameboard positions and the indicia on each of said batter's deck cards corresponds to the associated one of said gameboard positions for thereby providing a structure making possible simulated pitching to a batter by matching of position indicia on successive pitcher deck cards against position indicia on a batter's deck card for determining strikes and hits by the batter, and a defense deck of cards, the cards in each deck including baseball plays thereon, and

(c) moveable pieces representing base runner baseball players adapted to be placed at each base on said playing field in accordance with the outcome of said baseball plays.

4,210,336
GAME WITH GAME BOARD AND PIECES

Violetta Williamson, 1423 Easton Ave., Bethlehem, Pa.

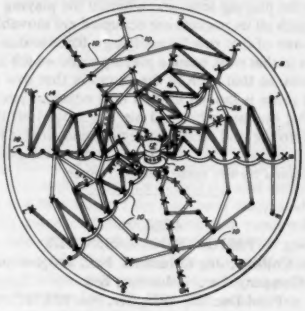
Filed Sep. 11, 1978, Ser. No. 941,153
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—258 6 Claims

1. Game apparatus designed for two players in competition to move game pieces along preset paths according to rules comprising:

(a) primary game pieces, said game pieces comprising a plurality of different pairs of game pieces, each member of each pair bearing indicia of identification to distinguish it from its set mate and from one another within the set and, thereby, providing each of two players with an identical group of non-identical game pieces;

(b) secondary game pieces comprising two sets of a plurality of identical game pieces, each of said set members bearing indicia of identification to distinguish it from its set mate, thereby providing each of said players with an identical group of identical game pieces; and

(c) a two-dimensional game board, said board's playing area being generally circular in shape and containing thereon a plurality of game piece paths in the form of zigzags, each

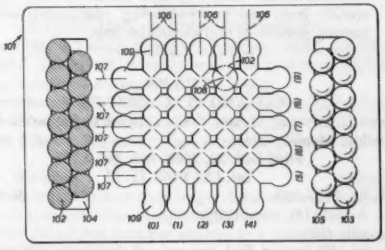


of said paths commencing at a point on said circle's edge, said commencement points each bearing indicia corresponding to the indicia on a different one of said primary game pieces, and terminating at said circle's center, said number of paths corresponding to the total of said primary game pieces, said paths bearing demarcations indicating resting places for game pieces during play, some of said resting place demarcations immediately preceding said termination points bearing indicia corresponding to the indicia on said secondary pieces, said resting places so marked being equal in number to the number of secondary game pieces.

4,210,337
ALIGNMENT GAME

Gilbert K. J. Obermair, Munich, Fed. Rep. of Germany, assignor to J. W. Spear & Sons Limited, United Kingdom

Filed Jan. 11, 1978, Ser. No. 868,679
Claims priority, application United Kingdom, Jan. 14, 1977, 1567/77
Int. Cl.[2] A63F 3/00
U.S. Cl. 273—264 12 Claims



1. A game comprising at least two sets of playing pieces, each playing piece being in the form of a ball and having an identifiable characteristic, the playing pieces in each set having the same identifiable characteristic, which characteristic is

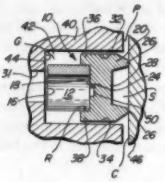
different from the identifiable characteristic of the pieces in the other set or sets, and a board defining a playing area, the playing area comprising two sets of parallel rows of channels, the rows in one set of rows lying transverse to the rows in the other set of rows, each of the intersections between the rows in one set and the rows in the other set defining a pocket for receiving a playing piece, the total number of playing pieces being at least one more than the number of pockets and the board defining a playing piece receiving region outside the playing area; wherein, in play, every pocket is simultaneously occupied by a playing piece, the playing pieces being visible and lying in substantially the same plane, and the number of pieces in one set of pieces on the playing area is the same as or one more than the number of pieces in the other set or sets of pieces on the playing area, and wherein the playing pieces in a row in which all its pockets are occupied are movable together along the axis of that row by applying a force to one of the two end pieces in that row, using a playing piece which is not in the playing area, so that each of the pieces in that row except the other end piece is moved into its next adjacent pocket in that row, so that the said other end piece is moved off the playing area and into the said receiving region, and so that the playing piece used to apply the force is received in the pocket previously occupied by the same one end piece.

4,210,338

PISTON RING ASSEMBLY

Charles A. Collings, Jr., Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 28, 1978, Ser. No. 973,737
Int. Cl.[2] F16J 9/06, 9/12
U.S. Cl. 277—76 **12 Claims**



1. A piston ring assembly comprising
an annular parted expansion ring having an axial piston ring bearing portion; and
an annular parted piston ring disposed substantially circumferentially around said expansion ring and having an outer annular portion and an inner annular portion, the latter having a predetermined segment thereof in bearing contact with the bearing portion of said expansion ring; said inner annular portion being provided with at least one circumferential recess spaced generally radially outwardly from and in non-bearing relationship with the bearing portion of said expansion ring.

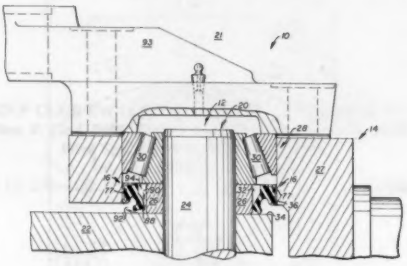
4,210,339

SEAL AND SEAL ASSEMBLY

James H. Povejsil, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Dec. 26, 1978, Ser. No. 4,791
Int. Cl.[2] F16J 15/32
U.S. Cl. 277—153 **36 Claims**

1. A seal (16), comprising:
a body (38);
a leg (40) having first, second and third sides (46,48,50), a middle portion (56) and first and second end portions (52,54) and being connected at the first end portion (52) to the body (38) ,said first side (46) being linear and generally opposed to said second side (48), said second side (48) having a linear portion (64) intersecting the third side (50) and being parallel to the first side (46) and an arcuate portion (62) defining an arcuate surface (58) extending curvilinearly inwardly in a direction generally toward the first side (46) and defining a reduced cross-sectional area of said leg (40) at the middle portion (56) relative to the second end portion (54), said third side (50) being linear and intersecting said first and second sides (46,48) at the second end portion (54), said second end portion (54)



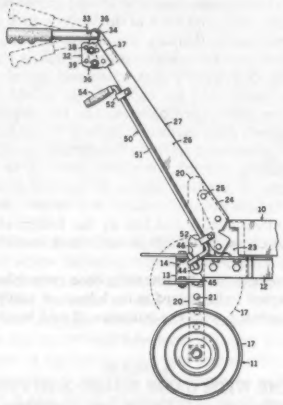
being of a construction sufficient for being controllably deflectable relative to said first end portion (52) in response to a force exerted on at least one of the first and third sides (46,50); and
first and second sealing areas (42,44) positioned on said leg (40) adjacent the intersection of the first and third sides (46,50), and the intersection of the second and third sides (48,50), respectively.

4,210,340

HEIGHT-ADJUSTING ASSEMBLY FOR IMPLEMENT WHEELS

Kenneth W. White, Bridgeton, Mo., assignor to Atlas Tool & Manufacturing Co., St. Louis, Mo.

Filed May 4, 1978, Ser. No. 902,868
Int. Cl.[2] B62D 21/18
U.S. Cl. 280—43.17 **1 Claim**



1. A height-adjusting assembly for implement wheels, comprising:
(a) a base including a wheel-mounting bracket,
(b) an implement handle attached to the base and extending upwardly and rearwardly from the base and including hand-gripping means at the upper end,
(c) wheel means including an adjustment bar disposed adja-

cent the bracket, the bar including a plurality of longitudinally spaced apertures, and

(d) locking means selectively interconnecting the adjustment bar and bracket, and including:

1. a lock pin reciprocatively mounted on the bracket and selectively interconnected with one of the bar apertures,
2. a compression spring between the bracket and the lock pin tending to urge the pin into the selected bar aperture, and
3. a wheel-adjusting handle means including an elongate rod rotatively mounted on its longitudinal axis on the implement handle, the elongate rod having one end connected to the lock pin, and having the other rod end located adjacent the hand-gripping means of the implement handle for rotating the elongate rod about its longitudinal axis for selectively withdrawing the lock pin from or inserting the lock pin in the bar apertures under loading of the spring to determine the adjusted wheel height.

4,210,341

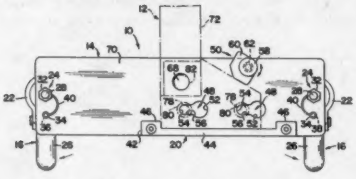
TRANSPORT APPARATUS

William Minkoff, 15703 Redington Dr., Redington Beach, Fla. 33708

Filed Mar. 24, 1978, Ser. No. 889,734

Int. Cl.[2] B62B *3/04*

U.S. Cl. 280—79.1 A **7 Claims**



1. A transport apparatus comprising a pair of dolly devices for moving beds which include side rails having head and foot frames formed on opposite ends thereof wherein the head and foot frames each have at least one connector formed thereon, each said dolly device comprising an elongated base plate, a pair of swivel mounted casters attached to opposite ends of said elongated base plate and attachment means formed on said elongated base plate to engage the bed, said attachment means comprising at least one retainer aperture including an enlarged retainer opening and reduced retainer opening formed on said elongated base plate to receive the connector of the head and foot frames, a retainer element comprising a retaining member disposed along the longitudinal axis of said elongated base plate and at least one end member extending inwardly from one end thereof to engage the head and foot frames of the bed, and a frame lock comprising a tightener member and cam element coupled to said elongated base plate by a lock connector, said tightener member fixedly attached to the upper portion of said lock connector and said cam element rotatably mounted on said lock connector to engage the head and foot frames, said cam element comprises a member having its periphery unequal distances from its point of rotation, said tightener member movable between a locked and unlocked position to selectively lock said cam element in securing engagement with the head and foot frames.

4,210,342

CONNECTING ELEMENT

Erwin Krob, Vienna, and Erwin Weigl, Brunn am Gebirge, both of Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Sep. 26, 1977, Ser. No. 836,844

Claims priority, application Austria, Sep. 24, 1976, 7121/76

Int. Cl.[2] A63C *11/00*

U.S. Cl. 280—636 **6 Claims**

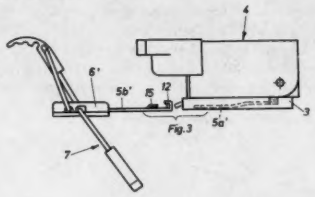


Fig. 3

1. In a connecting element for the selective fastening of a stepping plate to a guide plate on a guide rail secured to a ski, said stepping plate and said guide plate being spaced from each other along the longitudinal axis of said ski, said stepping plate functioning as a base support for a ski boot when said ski boot is operatively associated with a ski binding mounted on said guide plate, wherein guide means are provided for guiding and supporting said guide plate for movement in a direction parallel to said longitudinal axis of said ski to selected positions, the improvement comprising wherein said connecting element comprises an elongated pull rod connected to and extending between said stepping plate and said guide plate and having first and second parts and releasable connecting means for connecting said first and second parts together, said first part being connected to said stepping plate and said second part being connected to said guide plate, said releasable connecting means including first projection means on one of said first and second parts, first receiving means on the other of said first and second parts for releasably receiving said first projection means therein, said releasable connecting means further including lateral support means for providing lateral stability to said stepping plate, said lateral support means comprising second projection means on one of said first and second parts and second receiving means on the other of said first and second parts for releasably receiving said second projection means therein, said first projection means and cooperating first receiving means, when said first and second parts are connected together, being spaced longitudinally along the length of the connected first and second parts from said second projection means and cooperating second receiving means to minimize relative lateral movement between said first and second parts and for maintaining the longitudinal axis of said pull rod parallel to said longitudinal axis of said ski.

4,210,343

AUTOMOTIVE SUSPENSION SYSTEM

Masanao Shiomi, Toyota; Masakazu Ishikawa, Aichi, and Hiroshi Kato, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotashi, Japan

Continuation of Ser. No. 777,894, Mar. 16, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,094

Claims priority, application Japan, Apr. 5, 1976, 51/40890

Int. Cl.[2] B60G *11/52*

U.S. Cl. 280—668 **3 Claims**

1. A suspension system including a shock absorber having a piston-cylinder assembly, comprising:

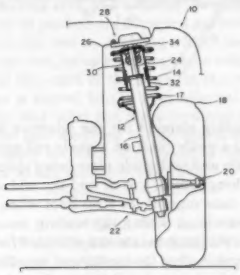
an inner cylindrical member secured to a piston rod in said shock absorber;

an outer cylindrical member disposed coaxially of said inner cylindrical member and secured to a body of an automobile;

a resilient member of a cylindrical form, which is positioned between said inner cylindrical member and said outer

cylindrical member, said resilient member having an inner peripheral surface and an outer peripheral surface secured to said inner and outer cylindrical members, respectively, an inwardly concave contour being provided in the bottom surface of said resilient member, the lower portion of said resilient member being converged downwards, whereby high frequency, light vibratory loads capable of causing noise problems are loaded in shear on the resilient member and are effectively absorbed to thus isolate vibration from the body of the automobile; and

a stopper disposed in the close vicinity of the end surface of said resilient member and secured to said inner cylindrical member, said stopper including a flange portion spaced



from and adapted to abut the bottom surface of said cylindrical resilient member, the outer edge of said flange portion being rounded downwards, the flange portion of said stopper having a substantially "S" shaped cross-section which extends downwards in opposed relation to said bottom surface of said cylindrical resilient member, whereby said flange may abut said bottom surface of said resilient member to restrict an excessive displacement of said resilient member in its axial direction such that the contacting area between said cylindrical resilient member and said flange increases in proportion to the displacement of said cylindrical resilient member, thereby imparting a nonlinear characteristic to the stress-strain relationship of the resilient member.

4,210,344

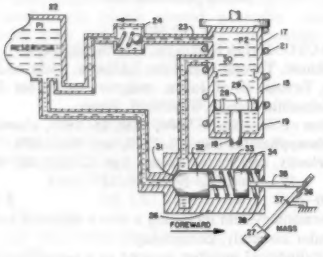
CONTROLLED SHOCK ABSORBER

Charles Curnutt, 75992 Baseline, 29 Palms, Calif. 92277

Filed Jan. 26, 1979, Ser. No. 6,636

Int. Cl.² B60G *25/00*

U.S. Cl. 280—709 **7 Claims**



1. A controlled shock absorber for positioning between a vehicle frame and axle including, in combination:

(a) a fluid type piston-cylinder shock absorber including a cylinder coupled to said frame and piston reciprocable therein with fluid bypass means, said piston having a piston rod extending from one end of said cylinder and coupled to said axle;

(b) a fluid reservoir for holding fluid under a given high pressure;

(c) a check valve connected between said cylinder and reservoir for passing fluid from said cylinder to said reservoir only when the pressure of fluid in said cylinder exceeds said given high pressure; and

(d) a pressure relief valve connected between said reservoir and cylinder and set to open a controlled amount to control the pressure of fluid in said cylinder and thereby the force tending to urge the piston from the cylinder.

4,210,345

PRESSURE-SENSITIVE RECORDING OR COPYING MATERIAL

Horst Kosche, Duren, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

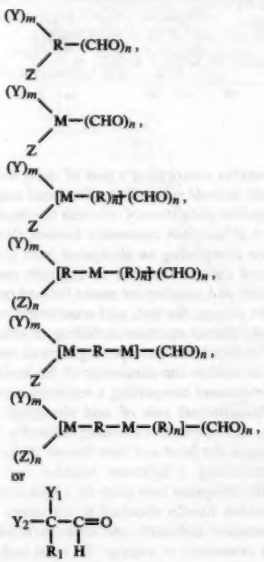
Filed May 24, 1978, Ser. No. 909,150

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724295; Jul. 1, 1977, 2729739

Int. Cl.² B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **16 Claims**

1. In a pressure sensitive recording or copying material which contains, in its color reactant system; a color-producing acceptor as the developer for the color-forming agent, the improvement wherein the developer contains at least one member which is the reaction product of an electronegatively substituted aldehyde and an aliphatic organic compound containing hydroxyl groups, such that the aldehyde moiety is bonded to the radical of said aliphatic organic compound via at least one oxygen atom, said electronegatively substituted aldehyde being an electronegatively substituted mono- or polyaldehyde, wherein at least one such electronegative substituents is halo or cyano and interacts electromerically with at least one aldehyde group thereof, said aldehyde having the formula



or

wherein

R is a substituted or unsubstituted, saturated or unsaturated aliphatic radical,

M is a substituted or unsubstituted aromatic, aromatic-

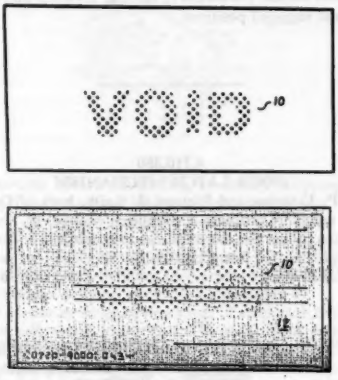
cycloaliphatic, aromatic-heterocyclic or heterocyclic radical with aromatic properties,
Y is halo or cyano,
Z is hydrogen or an acid group,
m and n are independently an integer of 1 to 6.
Y_1 is hydrogen or halogen,
Y_2 is halogen, and
R_1 is hydrogen, carboxyl, alkyl of 1 to 3 carbon atoms, halogenoalkyl of 1 to 3 carbon atoms, phenyl, benzyl or halogenobenzyl.

4,210,346

PROTECTED DOCUMENT BEARING WATERMARK AND METHOD OF MAKING

William H. Mowry, Jr., Ionia; Michael J. McElligott, Rochester; Victor J. Tkalenko, Jr., Rochester; Joseph Baran, Rochester, and Curtis W. Ingalls, Fairport, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 23, 1977, Ser. No. 809,261
Int. Cl.[2] B42D *15/00*; B44F *1/12*
U.S. Cl. 283—8 B **10 Claims**



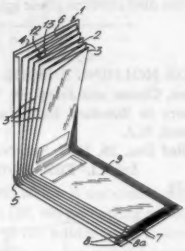
1. A security document adapted for use with a xerographic color copier having a lens reproduction system which has a reproduction density threshold which at normal operator accessible copier settings reproduces dots of a tone density which are larger than the reproduction density threshold and which does not resolve and consequently does not reproduce dots of a tone density which are smaller than the threshold, the security document preventing the faithful reproduction of all portions of the original image printed on the surface thereof on copies made at the normal operator accessible copier settings on said color copier and which instead, when copied using said lens reproduction system, is reproduced with a warning mark which is part of the original printed image on the document, the appearance of which warning mark indicating that the copy is not the original security document, said security document comprising:
a substrate; and
a security background printed on said substrate;
said security background comprising:
a warning mark composed of a dot pattern of a plurality of relatively large dots patterned so as to comprise said warning mark, which pattern is surrounded by a plurality of spaced small dots and wherein the large dots and small dots are printed in non-cumulative mode, the dots being registered so as to be in phase with the large dots being spaced a distance which is a multiple of the distance between the small dots, and further wherein the large dots and small dots are aligned as a parallel screen with the pitch of the smaller dots being twice the pitch of the large dots, which large dots and smaller dots are camouflaged by a camouflage overlay pattern printed as a visually confusing and obscuring pattern at and between said large and small dots on said substrate such that the large and small dots appear interspersed with said camouflage patterns;
said substrate bearing on one side thereof a printed protective watermark of white colored ink.

4,210,347

MAPS

Ralph G. Robbins, and Victor E. Bates, both of Basingstoke, England, assignors to The Automobile Association Limited, Basingstoke, England

Filed Jul. 11, 1978, Ser. No. 923,735
Claims priority, application United Kingdom, Jul. 15, 1977, 29848/77
Int. Cl.[2] G09B *29/00*
U.S. Cl. 283—35 **2 Claims**



1. A map comprising a concertina-folded sheet printed on both sides of the sheet, the markings on the two sides representing contiguous areas and being disposed so that a line on the map representing a route passing from one such area to the other extends around an edge of the sheet which lies at right angles to the concertina folds, the sheet having on an outer end flap two key maps, inverted with respect to each other and corresponding respectively to the two sides of the sheet, to direct the user to the desired part of the map by means of indicia associated with the key maps which correspond to indicia provided upon the edge folds of the map, and wherein the sheet is concertina-folded in such a way that successive panels, proceeding from the end flap having the key map thereon, are progressively wider, the said indicia being provided on the portions of the successive folds which are thereby rendered visible when the map is folded.

4,210,348

DUST-SEALING ASSEMBLY FOR A COUPLING

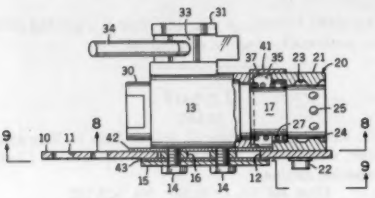
Willis S. Hobson, Columbus, and Elmer A. Graber, Seymour, both of Ind., assignors to Seymour Manufacturing Co., Inc., Seymour, Ind.

Filed Mar. 27, 1978, Ser. No. 890,067
Int. Cl.[2] F16L *37/22, 37/28*
U.S. Cl. 285—1 **5 Claims**

1. In a coupling for use in a fluid circuit:
(a) a mounting plate,
(b) a body member mounted on the mounting plate,
(c) a sleeve member movably mounted on and extending from one end of the body member,
(d) a nipple-releasing means fixed to the mounting plate and embracing the sleeve member, the nipple-releasing means being spaced from the one end of the body member,
(e) a compression spring disposed about the sleeve member in the space between the body member and nipple-releasing means for holding the body member relatively away

from the nipple-releasing means, and permitting relative axial movement toward and away from each other,

(f) a dust cover disposed about the sleeve member and spring, and in the space between the body member and



nipple-releasing means for deterring entry of foreign material into the space, and

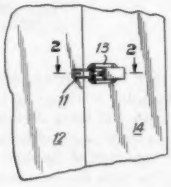
(g) the same compression spring engaging the dust cover and retaining the dust cover in place against the body member.

4,210,349

DEVICE FOR HOLDING A DOOR FIRMLY CLOSED

Sanford L. Cook, Ocean, and Joseph N. Villa, Freehold, both of N.J., assignors to Standard Keil Hardware Manufacturing Co., Allenwood, N.J.

Filed Dec. 26, 1978, Ser. No. 973,263
Int. Cl.[2] E05C *19/02*
U.S. Cl. 292—78 **6 Claims**



1. Device for holding a door firmly but releasably closed against a door jamb, comprising a bracket mountable on said door and a bistable assembly mountable on said jamb for engagement with said bracket, said bracket having a base for mounting same to said door and a top projecting toward said assembly for engagement therewith, said assembly including an assembly housing, said housing containing a hydraulic cylinder and a piston and spring within said cylinder, said piston extending through one end of said cylinder,

first pin means mounting said cylinder proximate the other end thereof to said housing for rotation about a first axis centered in said first pin means,

a bell crank having a tip arm for engagement with said bracket tip in closing a door and a piston arm for making connection with said piston,

second pin means mounting said bell crank proximate the junction of said arms to said housing for rotation about a second axis centered in said second pin means,

third pin means pivotally joining the outer end of said piston arm with the outer end of said piston for mutual rotation around a third axis centered in said third pin means, said first and second axes defining a fixed plane, said spring biasing said piston inwardly of said cylinder and urging said third pin means toward said first pin means,

said bell crank being rotatable between standby and engaged positions, said third pin means being on a first or second side of said plane when said bell crank is in said standby and engaged position respectively, and stop means engageable with said tip arm for defining said standby position of said bell crank and thereby of said cylinder and piston,

said bistable assembly being so constructed and disposed relative to said bracket and tip of same that opening of said door rotates said bell crank from said engaged to said standby position and closing of said door rotates said bell crank from said standby position to said engaged position, thereby moving said third pin means from one side of said fixed plane to the other side thereof, said spring in combination with said piston and third pin means serving

(1) to hold said bell crank releasably in whichever position to which said bell crank has been rotated by movement of said door and bracket tip; and

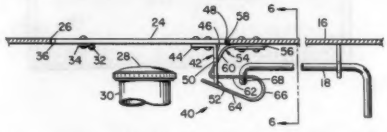
(2) to press said door firmly against said jamb by engagement of said tip arm of said bell crank with said bracket tip, said hydraulic cylinder and said bell crank being so disposed relative to each other that the distance from said first pin means to said third pin means exceeds the distance from said first pin means to said second pin means at and between said standby and engaged position, whereby said piston must pass through the axis of said second pin means in moving between said standby and engaged positions.

4,210,350

DOOR LATCH MECHANISM

George P. Lysenko, and Richard J. Smith, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 20, 1978, Ser. No. 926,554
Int. Cl.[2] E05C *19/06*
U.S. Cl. 292—86 **6 Claims**



1. In combination with an enclosure having a wall provided with an access opening and a door having a hinge connection adjacent one edge thereof connecting the door to the wall for movement between a closed position wherein it blocks access through the opening and an open position wherein it is pivoted relative to the opening for permitting access therethrough, and a latch mechanism including a catch member mounted on the door adjacent a second edge opposite from the one edge and a lock member mounted on the wall for releasable engagement with the catch member; the improvement residing in the latch mechanism and comprising: said catch member including a catch portion disposed in spaced parallel relationship to the door; said lock member being in the form of a spring metal strap having a clip portion formed at one end thereof and including a pair of resiliently separable legs disposed in gripping engagement with the catch portion, when the door is in its closed position, an intermediate deflectable portion joined to the clip portion and a mounting portion joined to the intermediate portion and secured to the wall at a location adjacent the catch member when the door is in its closed position; and a lock member release actuator connected to the clip portion and operable for pulling on the latter to effect deflection of the deflectable portion and withdrawal of the separable legs from the catch portion of the latch member to thereby release the door.

4,210,351

SANITARY PICKUP DEVICE FOR ANIMAL FECES

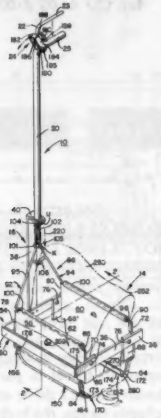
Michael J. Orofino, 2 Brookside Dr., Baldwin, N.Y. 11510

Filed Sep. 19, 1978, Ser. No. 943,718

The portion of the term of this patent subsequent to Jun. 27, 1995, has been disclaimed.

Int. Cl.[2] A01K *29/00*

U.S. Cl. 294—1 BB **12 Claims**



1. A portable device for picking up animal droppings and collecting those droppings into a wrapper comprising:

a frame;

a pair of blades pivotally mounted on said frame and each having side edges, an upper edge and a bottom edge, said blade upper edges defining a top access area and said blade lower edges defining a bottom access area;

a blade operating hinge having a pair of arms each having an upper end and a lower end with said lower ends each being hingeably connected to a blade upper edge, said hinge being located to one side of said blades to provide free access to the area between said blades via either said top or the bottom access areas;

an operating rod hingeably connected to said hinge upper ends and being movably connected to said frame so that movement of said rod with respect to said frame causes said blade upper edges to move via the movement of said hinge, said blades being mounted on said frame to be caused to tilt toward and away from each other by the movement of said upper edges; and

means for closing the wrapper.

4,210,352

HOISTING APPARATUS

Göran Eriksson, Gävle, Sweden, assignor to Jack Roland, Gävle, Sweden

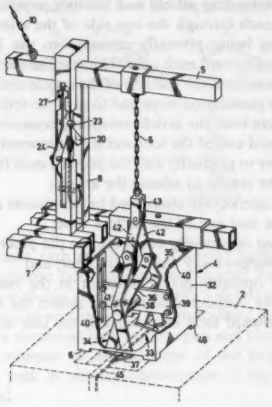
Filed Sep. 21, 1978, Ser. No. 944,617

Claims priority, application Sweden, Sep. 28, 1977, 7710827; Feb. 27, 1978, 7802186

Int. Cl.[2] B66C *17/04*

U.S. Cl. 294—81 R **18 Claims**

1. Hoisting apparatus of the type comprising at least one gripping device (33) associated with a holder (4), said gripping device being movable relative to the holder between an operative position and an inoperative position, and a carrier (5), which is movable relative to the holder (4) towards a position remote from the holder as well as securable—by means of a control mechanism—relative to the holder in a position closer thereto than the first-mentioned position, said carrier being connected to the gripping device (33) through at least one pull member (6) which in a tensioned condition—when the carrier is unsecured and movable relative to the holder—forces the gripping device to assume a first one of said two positions thereof and in a tensionless condition—when the carrier is unsecured relative to the holder—permits the gripping device to assume the second one of said two positions thereof, characterized in that the gripping device (33) comprises at least one arm (36) which is provided with a gripping claw (37) and rotatable between said operative position and said inoperative



position about an axis (38) which is associated with the holder (4) through a connection (39, 40) permitting raising and lowering of said axis relative to the holder so as to locate the gripping claw (37) substantially on one and the same level at the bottom of the holder irrespective of whether the gripping claw is kept in the operative position by action of said pull member or is remote from said position.

4,210,353

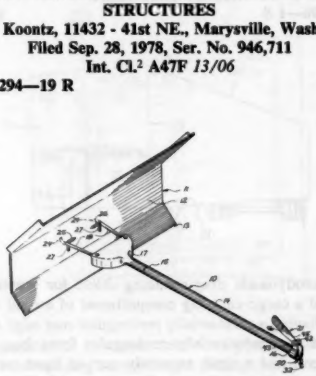
TOOL FOR INSERTING COMBINATION INSULATION STOP AND VENTILATION BAFFLE ARTICLES IN ROOF STRUCTURES

Bryce L. Koontz, 11432 - 41st NE., Marysville, Wash. 98270

Filed Sep. 28, 1978, Ser. No. 946,711

Int. Cl.[2] A47F *13/06*

U.S. Cl. 294—19 R **7 Claims**



1. A tool for remote installation of combination insulation stop and ventilation baffle articles in roof structures, comprising:

a hollow enlongated tube extending from an open forward end to an open rearward end;

a housing at the forward end of the tube;

a pair of pincers mounted to the housing and extending forwardly therefrom;

said pincers each having a pivoted end extending forward

and curved inward toward each other for penetrating a baffle article from one side thereof to grip the article transversely across the forward end of the tool to enable the article to be installed in a remote location in the roof structure;

said pincers each having transversely extending penetration stops rearward of the pointed ends for engaging the transversely extending article and limiting penetration of the pointed ends through the one side of the article;

said pincers being pivotally mounted to the housing for movement toward each other to cause the curved pointed ends to penetrate the one side of the article until the article abuts the penetration stops and to grip the article between the pincers with the article extending transversely across the forward end of the tool and for movement away from each other to gradually pull the pointed ends from the one side of the article to release the article;

link means operatively connected to the pincers and extending to the rear end of the hollow tube;

spring means operatively connected to the pincers for biasing the pincers away from each other; and

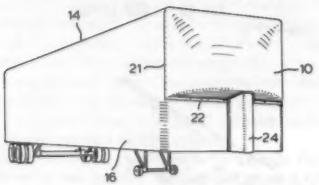
a manually operable pincer actuator at the rearward end operatively connected to the link means for moving the pincers toward each other against the bias of the spring means.

4,210,354

AERODYNAMIC DRAG-REDUCING SHIELD FOR MOUNTING ON THE FRONT OF A CARGO CARRYING COMPARTMENT OF A ROAD VEHICLE

Robert B. Canning, 120 Widdicombe Hill Blvd., Apt. 708, Weston, 4A6

Filed Feb. 6, 1978, Ser. No. 875,202
Int. Cl.[2] B62D *35/00*
U.S. Cl. 296—1 S **8 Claims**



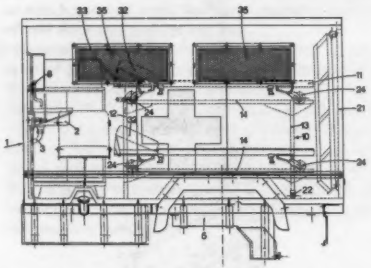
1. An aerodynamic drag-reducing shield for mounting on the front of a cargo-carrying compartment of a road vehicle, the shield having a substantially rectangular rear edge adapted to conform to a substantially rectangular front face of said compartment, and a rigid, smoothly curved front surface of which all horizontal sections conform to a semi-ellipse having its minor axis extending longitudinally of the vehicle and its major axis transversely, each of said sections having the same transverse width, the shield having an upper portion curving smoothly rearwardly to the upper rear edge of the shield and having a vertical cross-section that conforms substantially to a segment of a further ellipse having its major axis extending in the vertical median plane of the shield, and a minor axis extending horizontally in said median plane; and a lower portion of the same width as said upper portion and being of uniform horizontal semi-elliptical cross-section.

4,210,355

AIR-TRANSPORTABLE HIGHLY AUTONOMOUS CROSS-COUNTRY MEDICAL VEHICLE

Paul E. R. Legueu, Pornichet, France, assignor to A.C.M.A.T. Ateliers de Constructions Mecaniques de l'Atlantique, Saint Nazaire, France

Filed Sep. 25, 1978, Ser. No. 945,333
Claims priority, application France, Jan. 11, 1978, 78 00639
Int. Cl.[2] A61G *3/00*
U.S. Cl. 296—19 **3 Claims**



1. An air-transportable highly autonomous cross-country medical vehicle adapted to travel in particular in desert regions, comprising chassis means, a drive unit and a closed body both carried by the chassis means, the body having a longitudinal axis, equipment for medical intervention and caring for victims of accidents or injured persons contained inside said body, said body comprising a front end wall, a rear end wall having two outwardly operable door members, lateral longitudinal extending walls, and a floor carrying sector-shaped tracks thereon, a stand mounted on said body to be movable between a transport position in which the stand is substantially parallel to said longitudinal axis and a loading position in which the stand makes an angle with said longitudinal axis, said stand comprising a frame including uprights, longitudinal members and cross-members assembled together, at least two superimposed stretchers removably mounted on said stand, two support means on the frame respectively receiving the stretchers, and sliding means associated with a lower part of the stand to facilitate said movement of the stand comprising rear uprights of said uprights of the frame relative to the forward direction of travel of the vehicle having in combination therewith rolling means rollable along said tracks when moving the stand between the transport and loading positions thereof.

4,210,356

CLAMP FOR FASTENING TRIM ABOUT A WINDSHIELD

Dietrich Junemann, Loerrach, and Hans Henning, Weil-Haltingen, both of Fed. Rep. of Germany, assignors to A Raymond, Loerrach, Fed. Rep. of Germany

Filed Feb. 22, 1978, Ser. No. 880,167
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2710592
Int. Cl.[2] B60J *1/00, 9/00*
U.S. Cl. 296—84 A **12 Claims**

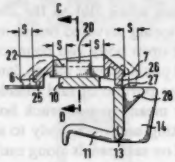
1. A clamp for fastening an elongated strip of trim about the margin of a windshield mounted in a seating frame comprising;

a clamping component for securing the clamp in place about the windshield,

a holding component including a pair of elastic holding strips extending lengthwise in a direction generally parallel to the margin of the windshield for holding the strip of trim, and

means carried by said clamping component and engageable with said holding component to secure said holding component to said clamping component for slidable move-

ment of said holding component relative to said clamping component in a direction generally transverse to the longi-



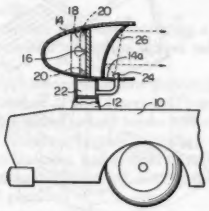
tudinal extent of said holding strips to compensate for dimensional deviations between the seating frame and the windshield.

4,210,357

VEHICLE HAVING SIDE-REAR SURVEILLANCE RADAR WITH ANTENNA REFLECTOR ASSEMBLED WITH REARVIEW MIRROR

Masahiro Adachi, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Sep. 15, 1978, Ser. No. 942,791
Claims priority, application Japan, Sep. 16, 1977, 52-110538
Int. Cl.[2] B62D *39/00*
U.S. Cl. 296—84 B **11 Claims**



1. A vehicle comprising:

a body;

a rearview mirror unit including a mirror frame mounted on the outside of said body in a front and side portion thereof and a rearview mirror received in said mirror frame; and

a radar system for surveillance of a side and rear area, said radar system comprising a microwave transmitter unit, a feeder horn connected to said transmitter unit to radiate microwave generated by said transmitter unit and an antenna reflector to reflect rearwards the microwave radiated from said feeder horn, said reflector having a light-transmissible structure and being received in said mirror frame so as to be spaced rearwards from said rearview mirror, said mirror frame and said reflector being arranged such that said reflector protrudes, at least partly, sidewise from the outline of said body.

4,210,358

CLOSURE PANEL ACTUATOR

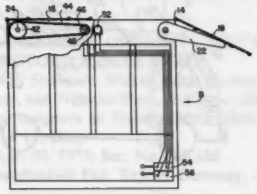
Philip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Inc., Fresno, Calif.

Filed Oct. 16, 1978, Ser. No. 951,623
Int. Cl.[2] B60P *7/02*
U.S. Cl. 296—100 **8 Claims**

1. In combination with a closure panel adjacently related to an opening and supported for pivotal displacement between open and closed dispositions relative to said opening and about a first pivotal axis arranged in juxtaposition with the opening, the improvement comprising:

A. means for pivotally displacing said panel including a boss projected from the panel and supported thereby in parallelism with the first axis, and

means for displacing said boss along an arcuate path whereby said panel is pivotally displaced about said first axis between its open and closed dispositions including an arm supported for pivotal displacement about a second pivotal axis paralleling said first pivotal axis and along a path intercepted by said boss for displacing said boss along



said arcuate path and having a bearing surface extended along opposite side edge surfaces thereof for supporting the boss in sliding contact, whereby a sliding advancement of the boss along the arm is accommodated as said panel is pivotally displaced between its open and closed dispositions in response to displacement of the boss along said arcuate path as pivotal displacement is imparted to the arm; and

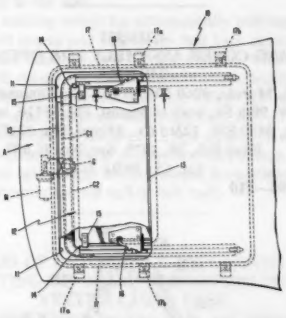
B. means for imparting to said arm pivotal displacement.

4,210,359

SLIDING ROOF APPARATUS FOR VEHICLES

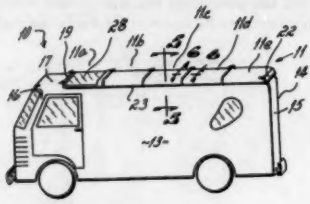
Keiji Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 28, 1978, Ser. No. 900,859
Claims priority, application Japan, Apr. 30, 1977, 52-50607
Int. Cl.[2] B60J *7/10*
U.S. Cl. 296—222 **7 Claims**



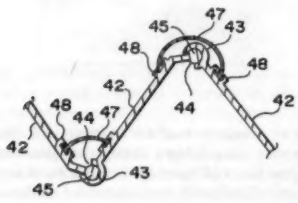
1. Apparatus in a vehicle roof for opening and closing a vehicle roof opening comprising a sliding roof panel adapted to close and open the roof opening through horizontal and vertical movement of the panel, means mounted on the vehicle roof for guiding the sliding panel, forward and rearward means provided respectively on the forward and rearward end portions of the sliding panel for engaging the guiding means, means operably connected to the guide-engaging means for driving the sliding panel to close and open the roof opening, and a link for pivotally mounting said rearward means on said slidable panel, the link having an end tooth portion engaging the guide means when the sliding panel is open for preventing vibration of the panel.

4,210,360
RECREATIONAL VEHICLE
Thomas E. Powers, 6325 Ridge Ave., Cincinnati, Ohio 45213
Filed Jun. 28, 1978, Ser. No. 919,753
Int. Cl.[2] B60J 7/10
U.S. Cl. 296—216 6 Claims



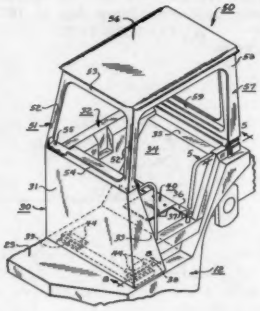
6. A recreational van vehicle body comprising,
a cab section including a windshield,
a body base having a floor, side walls extending from the floor to a level above the level of the windshield and a flange extending inwardly from the top of each of said side walls,
a first removable body top having low profile side walls, a ceiling extending between said side walls, and a lateral edge extending outwardly from each of said side walls,
a second removable body top having profile side walls, a ceiling wall extending between the top edge of said side walls, and said side walls including a flange extending outwardly from the bottom edge thereof, said side walls of said second removable body top being at least twice the height of said side walls of said first removable body top,
sealing means located between said body base side wall flange and said body top side walls,
locking means for interchangeably sealingly securing one of said first or second body tops to said body base, and,
each of said removable body tops comprising a plurality of unitary molded sections having joints molded therein along the leading and trailing edges thereof for interconnecting the sections one to the other and to the van body.

4,210,361
SLIDING COVER ASSEMBLY FOR OPEN BODY TRUCKS
Herbert Z. Marvin, 9860 SW. 102nd St.; Edmond L. Lohman, 9644 SW. 99th St., both of Miami, Fla. 33176, and Robert C. Lohman, 3570 SW. 123rd Ct., Miami, Fla. 33175
Filed Feb. 28, 1979, Ser. No. 16,838
Int. Cl.[2] B60J 7/10
U.S. Cl. 296—210 1 Claim



1. A sliding cover assembly for open body trucks having side portions comprising a pair of guide means mounted on said side portions of said open body, a plurality of elongated panels extending across said open body having edge portions slidably mounted in said guide means, each of said elongated panels having a substantially arcuate portion mounted along one edge portion and a cylindrical portion mounted along the other edge portion, said cylindrical portion of each of said panels rotatably received in said arcuate portion of an adjacent panel, said panels being bent at an obtuse angle in proximity of said other edge portion to permit said panels to be positioned in substantially parallel relation when slid to the forward end of said body of said truck, spring actuated return means mounted at a forward end of said open body and connected to the forward edge portion of said pliable cover means, latch means mounted at the rearward edge portion of said pliable cover means for securing said cover means to said truck body in an extended position for converting said open body to a closed body, and clip means mounted on said panels along each side of said pivot means, pliable sheet members extending over said pivot means and having edge portions engaged by said clip means for preventing the seepage of water therethrough.

4,210,362
OPERATOR'S COMPARTMENT AND SEAT MOUNTING
Richard F. Boersma, Springfield, Ill., assignor to Fiat-Allis Construction Machinery, Inc., Deerfield, Ill.
Filed Sep. 28, 1978, Ser. No. 946,516
Int. Cl.[2] B62D 27/04
U.S. Cl. 296—190 9 Claims

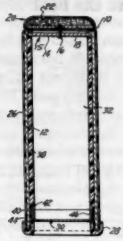


1. A mount for supporting an operator's compartment on a vehicle frame comprising
an operator's compartment supported on the vehicle frame,
securement means to fasten the operator's compartment to the vehicle frame at a plurality of support points, and
said securement means including isolation means operatively positioned adjacent said support points to isolate operator's compartment from noise and vibration induced on the vehicle frame during operation of the vehicle,
said isolation means includes a plurality of vibration absorption pads respectively situated between the operator's compartment and the vehicle frame at said plurality of support points,
said securement means further includes a plurality of fastening members adapted to support the pads in coupling relationship to the operator's compartment and the vehicle frame,
said operator's compartment and vehicle frame each including retention means receiving said fastening members to fasten the operator's compartment to the vehicle frame,
said retention means of the vehicle frame includes a forward pair of mounting brackets,
said mounting brackets having at least two openings for receiving a respective fastening member in coupling relationship, and
said at least two openings of one of said mounting brackets being aligned along an axis lying substantially perpendicular to an axis passing through said at least two openings of said other mounting bracket.

4,210,363
PORTABLE CONTAINER SEAT

Larry R. Taipalus, 29037 Barton, Garden City, Mich. 48135

Filed Jan. 10, 1979, Ser. No. 2,324
Int. Cl.[2] A47C 9/10
U.S. Cl. 297—192 10 Claims

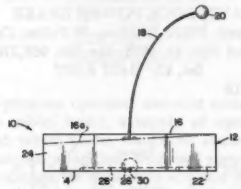


1. A portable container seat, comprising
an elongated stiff vertically-disposed hollow cylindrical container body having upper and lower end portions with openings therein,
a circular upper end closure structure secured to said upper end portion of said body in closing relationship to said upper end opening,
said upper end closure structure including a circular seat cushion thereon and extending across said upper end opening,
a circular lower-end closure structure disposed adjacent but in spaced relationship to said lower end portion in openable closing relationship to said lower end opening,
said lower end closure structure including an open-centered marginal member and a separate central member and means releasably securing said central portion to said marginal portion,
and means for securing said lower end closure structure to said lower end portion of said body.

4,210,364
PORTABLE FOOT REST

Calvin T. Kinsman, 1401 Bamboo La., New Port Richey, Fla.

Filed Jan. 19, 1979, Ser. No. 4,766
Int. Cl.[2] A47C 9/12, 4/52
U.S. Cl. 297—439 8 Claims

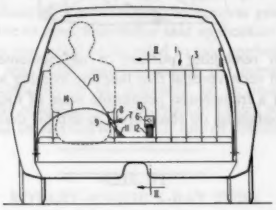


1. A portable foot rest to support the operator's feet above the floor of like surface so that the pressure from the weight of the legs is not exerted on the underside of the lower portion of the legs, said portable foot rest comprising a support member comprising a base surface and a support surface disposed in spaced relationship relative to each other, for supporting the feet above the floor or like surface in combination with the carrying means for transporting said portable foot stool from place to place said carrying means comprises a handle means having a substantially spherical configuration coupled to said support member by a substantially flexible cord, a storage means formed in said support means to receive said carrying means when said portable foot rest is not in use, said storage means is formed in said base surface said storage means comprising a first portion extending inwardly from the periphery of said support member in communication with a seat such that said first portion and said seat form a recess in the surface of said base to receive said flexible cord and said handle means when said portable foot rest is stored.

4,210,365
FASTENING ARRANGEMENT OF SAFETY BELT LOCKS AT MOTOR VEHICLE SEATS

Werner Breitschwerdt, Stuttgart; Walter Jahn; Herbert Rapp, both of Sindelfingen, and Wilhelm Klein, Aidlingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,185
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718140
Int. Cl.[2] A62B 35/00; A47C 31/00
U.S. Cl. 297—481 8 Claims



1. A safety belt arrangement for vehicle passenger seats of the type having a seat cushion and a backrest, said arrangement comprising:
first and second safety belt means,
a safety belt lock on said first safety belt means for locking said first and second safety belt means together to hold a passenger in the seat,
and elastic holding means for automatically holding said first safety belt means and said safety belt lock against a front side of said backrest in a storage position whenever said safety belt means are unlocked, said elastic holding means being disposed to act on said first safety belt means in a direction other than the extension direction of said first safety belt means so that said storage position is an accessible unretracted position of said first belt means,
and wherein said elastic holding means is continuously connected directly to said safety belt lock.

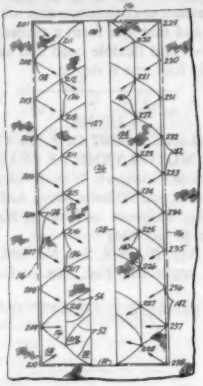
4,210,366
METHOD OF DETONATING EXPLOSIVES FOR FRAGMENTING OIL SHALE FORMATION TOWARD A VERTICAL FREE FACE

Ned M. Hutchins, Grand Junction, Colo., and Richard D. Ridley, Bakersfield, Calif., assignors to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 13, 1978, Ser. No. 959,893
Int. Cl.[2] E21B 43/24; E21C 41/10
U.S. Cl. 299—2 34 Claims

8. In a method for explosively expanding oil shale formation toward a limited void volume provided by a void excavated in a retort site in formation containing oil shale, wherein said void has at least one vertical free face, the improvement comprising the steps of:
placing explosive in a row of blasting holes in a remaining portion of unfragmented formation within the retort site adjacent such a vertical free face, said blasting holes being mutually spaced apart along the length of the void; and

detonating explosive in the blasting holes in a single round in a time delay sequence progressing along the length of the row of blasting holes for explosively expanding formation



in said remaining portion of unfragmented formation toward such vertical free face for forming at least a portion of a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort.

4,210,367

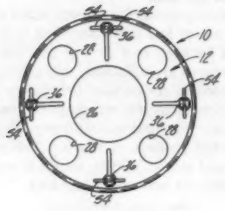
WHEEL TRIM ASSEMBLY

Edward G. Spisak, 35700 Oakwood La., Westland, Mich. 48185

Filed Nov. 6, 1978, Ser. No. 958,010

Int. Cl.² B60B 7/00

U.S. Cl. 301—37 R **9 Claims**



1. A wheel trim assembly for detachable attachment to the outer face of a vehicle wheel having a plurality of holes, the combination of; a mounting member forming a portion of a wheel trim member, a plurality of support elements extending axially and perpendicular to said mounting member, a plurality of resilient retainer elements detachably supported from each of said support elements, each of said retainer elements being generally U-shaped with a pair of legs joined to and spaced apart by a bight portion, said legs and bight portion being disposed parallel to the axis of said wheel with said bight portion engaging one end of the associated support element and said legs having free end portions engaging another end of the associated support element to maintain said retainer elements axially fixed relative to said mounting member, said pair of legs of each of said retainer elements having oppositely facing indentations to resiliently engage diametrically oppposed edges of said holes to releasably maintain said mounting member in position relative to said wheel.

4,210,368

TRACTOR-TRAILER AIR-BRAKE SYSTEM

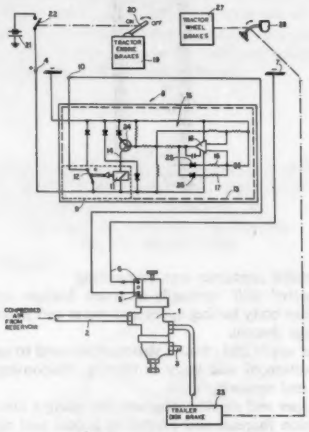
Georg Sontheimer, Ulm, Fed. Rep. of Germany, assignor to BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,955

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735748

Int. Cl.² B60T 13/74

U.S. Cl. 303—3 **7 Claims**



1. A tractor-trailer air-brake system comprising:

a tractor engine brake;

trailer air-powered disk wheel brakes;

actuator means for energizing said tractor engine brake and thereby braking the tractor of a tractor-trailer having said system;

means including an electrically operated valve operable between closed and open positions for pressurizing and energizing said trailer brakes on energization of said tractor brake to brake the trailer of said tractor; and

timer means connected to said valve and to said actuator means for automatically periodically operating said valve to periodically de-energize said trailer brakes even while said tractor brake is energized.

4,210,369

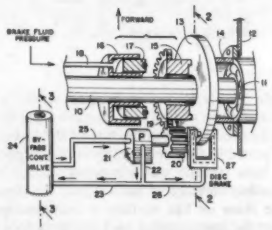
ANTI-LOCK POWER BRAKE

Charles R. Curnutt, 75922 Baseline, 29 Palms, Calif. 92277

Filed Dec. 11, 1978, Ser. No. 968,276

Int. Cl.² B60T 8/087

U.S. Cl. 303—116 **4 Claims**



1. An anti-lock power brake for providing controlled braking of a vehicle wheel, including, in combination:

(a) a disc rotatable with said wheel;
(b) a freely rotatably mounted clutch member coaxial with said disc such that said clutch member rotates with said disc when axially urged into engagement therewith;
(c) means responsive to application of the brake pedal of said vehicle to urge said clutch member into engagement with said disc;
(d) a positive displacement fluid pump coupled to said clutch member so that rotation of said clutch member operates said pump to provide fluid pressure proportional to the speed of rotation of said clutch member;
(e) a bypass valve connected between the output and input lines of said pump so that fluid circulates through said bypass valve at said pressure said bypass valve having a variable sized orifice responsive to said fluid pressure of the fluid circulating therethrough so that an increase of pressure increases the size of the orifice to thereby reduce said pressure and a decrease in said pressure decreases the size of the orifice to thereby increase said pressure, said variable sized orifice further being responsive to inertia resulting from movement of the vehicle such that sudden deceleration of the vehicle results in a momentary increase in the size of the orifice; and
(f) friction means connected to the output line of said pump and responsive to said fluid pressure to apply friction on said disc proportional to said pressure whereby when the brake pedal is operating, said clutch member is rotated by said disc to exert hydraulic pressure by way of said pump to said friction means thereby slowing the rotation of said disc, the decreased rotation of said disc resulting in a lower pump speed to reduce said hydraulic pressure and thereby the friction applied to said disc by said friction means so that an automatically controlled braking action takes place.

4,210,370

ANTI-SKID VEHICLE BRAKING SYSTEMS

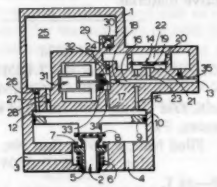
Ivan Mortimer, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 30, 1978, Ser. No. 955,536

Claims priority, application United Kingdom, Nov. 12, 1977, 47184/77

Int. Cl.² B60T *8/02*

U.S. Cl. 303—118 **9 Claims**



1. A fluid-pressure operated anti-skid system for vehicles comprising a wheel brake, a supply of operating fluid for actuating said wheel brake, fluid-flow control valve means through which operating fluid from said supply is supplied to said wheel brake, means responsive to a skid signal for operating said valve means to relieve pressure of said operating fluid at a skid point, means defining a memory chamber for storing a memory pressure dependent upon said pressure of said operating fluid at said skid point to provide a first changeover point between first and second stages of brake re-application, said first stage comprising the re-application of said operating fluid from said supply until an intermediate pressure less than the pressure at said skid point is attained at said first changeover point, and said second stage comprising the continued re-application of said supply of operating fluid at a reduced rate of pressure increase, means defining an application chamber for operating said fluid-flow control means, a supply of application pressure for said application chamber of which said pressure is reduced at said skid point by said means responsive to said skid signal, an inlet port from which said application pressure is supplied to said application chamber, a first one-way valve providing communication between said application chamber and said memory chamber, a first restrictor providing communication between said application chamber and said memory chamber in both directions, a latch valve disposed between said inlet port and said application chamber, a by-pass passage between said inlet port and said application chamber and by-passing said latch valve, a second restrictor in said by-pass passage, said latch valve being normally open but being adapted to be moved into a closed position in response to a decrease in pressure in said application chamber caused by said means responsive to said skid signal whereby said first and second successive stages of brake re-application depend upon said pressure in the application chamber being increased by said application pressure supplied only through said by-pass passage and said second restrictor until that pressure attains a value at a second changeover point, means for holding said latch valve in said closed position comprising a fluid pressure dependent upon pressure existing in said application chamber at said skid point, and means responsive to pressure in said application chamber at said second changeover point to cause said latch valve to open whereafter said application pressure at said inlet port can again be supplied to said application chamber through said latch valve to enable the pressure in said application chamber to be increased at an increased rate whereby brake re-application continues in a third stage continuous with said second but at a higher rate of pressure increase.

4,210,371

ROTARY-ANODE X-RAY TUBE

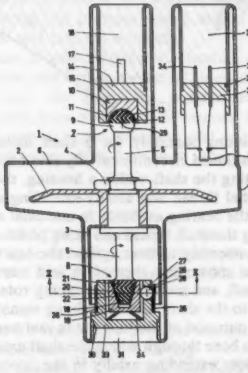
Jan Gerkema, and Everhardus A. Muijderman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,111

Claims priority, application Netherlands, Dec. 9, 1977, 7713634

Int. Cl.² F16C *3/02, 17/10*

U.S. Cl. 308—9 **6 Claims**



1. In an X-ray tube having a vacuum-tight housing, a rotary anode and at least one bearing having a first bearing surface on said rotary anode and a second bearing surface cooperating with said first surface to rotatably support said rotary anode in said housing, wherein the improvement comprises a lubricant for lubricating said bearing comprising Ga or a Ga alloy and having a sufficiently low melting point so that said lubricant is in a liquid state at the operating temperature of said bearing wherein said first and second bearing surfaces rotate with respect to each other with a gap therebetween which is filled

by the liquid Ga or Ga alloy so that there is no contact between said bearing surfaces even under loaded conditions, at least said cooperating bearing surfaces of said bearing being made from a material substantially resistant to attack by said Ga or Ga alloy and said Ga or Ga alloy being in molecular wetting contact with said bearing surfaces so that said lubricant in said liquid state is contained substantially within said bearing during operation of said tube thereby avoiding contamination of the tube with the lubricant.

4,210,372

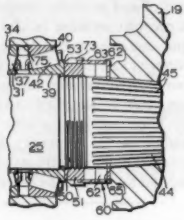
RETAINER FOR BEARING LOCK NUT

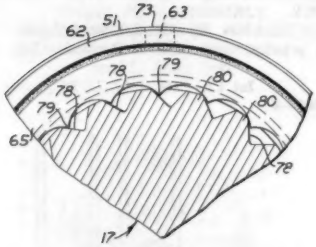
Mary Ann C. McGee, Chillicothe, and William A. Bahnfleth, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 767,856, Feb. 11, 1977, abandoned. This application Jun. 19, 1978, Ser. No. 916,975

Int. Cl.[2] F16C *33/30*; F16B *39/00*

U.S. Cl. 308—189 R **18 Claims**





1. A mounting assembly for a shaft including a bearing assembly positioned circumferentially about the shaft for rotatably supporting the shaft within a housing, the shaft having a circumferential thread and axially-extending splines disposed outward of the bearing assembly in one axial direction, a lock nut engaging the shaft thread and being positioned outward of the bearing assembly to bear against the bearing assembly to prevent axial movement thereof in said one axial direction along the shaft, and means for restraining rotation of the lock nut relative to the shaft, said restraining means comprising:

a retainer outward of the lock nut in said one axial direction having a bore through which the shaft extends and having projections extending axially in the opposite axial direction toward the lock nut, said bore having serrations defining teeth non-complementary to the shaft splines in a circumferential direction to cooperate with the shaft splines, said bore being oversized relative to the shaft and said serration teeth being undersized relative to the circumferential width of the grooves between the shaft splines to provide an interference with the splines and hold said retainer against rotation relative to the shaft;

means associated with the lock nut for engaging said projections to fix the lock nut against rotation relative to said retainer; and

means outward of the lock nut and said retainer in said one axial direction fixed to the shaft against axial movement for bearing against said retainer to prevent said retainer from axial disengagement with the lock nut, whereby the lock nut is fixed against rotation relative to the shaft so that the lock nut and the bearing assembly remain in preselected axial position.

4,210,373

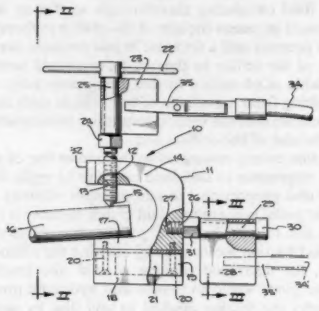
GROUND CLAMP FOR WELDING APPARATUS

Norris E. McGee, 929 Day Ave., Bakersfield, Calif. 93308

Filed May 21, 1979, Ser. No. 40,754

Int. Cl.[2] H01R *11/26*

U.S. Cl. 339—8 R **10 Claims**



1. A rotatable welding ground clamp comprising:

a main body portion forming upper and lower jaws of a clamp for securing a workpiece therebetween;

a rotatable bolt threadably mounted in one of said jaws having a handle at one end for rotating said bolt and a point at the other end extending between said upper and lower jaws for engaging a workpiece to thereby retain said workpiece between said point and the other of said jaws; and

a vane freely rotatably mounted on said bolt between said handle and said one of said jaws on the outside of said body portion, said vane and said bolt being of electrically conductive material.

4,210,374

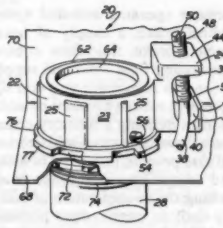
SET-SCREW BUSHING INCLUDING INTEGRAL ELECTRICAL CLAMP

Daniel Churla, Old Forge, Pa., assignor to Atlas Technologies Inc., Scranton, Pa.

Filed Mar. 3, 1978, Ser. No. 882,848

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 L **12 Claims**



1. In a set-screw bushing comprising an annual bushing body having an unthreaded inner surface for securement in a slip fit over a pipe having a threaded end, and integral, inseparable electrical conductor clamping means extending away from said

bushing body, adjustable pipe tightening means spaced from said clamping means, said pipe tightening means extending through said bushing body to bear inwardly against said pipe to hold said bushing body in fixed position about said pipe, tab means, integral with said bushing body, said tab means extending inwardly from said bushing body to contact said pipe, whereby said tightening means may be advanced inwardly against said pipe so as to force said pipe against said tab means to achieve a firm union of said bushing body and said pipe.

4,210,375

CONNECTING UNIT FOR DISPATCHERS SYSTEMS

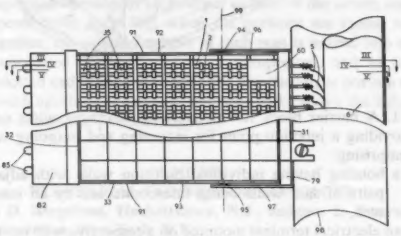
Yves Saligny, Cluses, France, assignor to Etablissements Carpano & Pons, France

Filed Oct. 27, 1978, Ser. No. 955,226

Claims priority, application France, Oct. 28, 1977, 77 33668; Oct. 5, 1978, 78 288141

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 L **29 Claims**



1. A connecting unit for dispatchers systems comprising junction means for a plurality of line wires, said means comprising a plurality of stacked insulating supports of generally rectangular shape with first and second sides opposite one another and third and fourth sides opposite one another and disposed at right angles to said first and second sides, first and second pre-shaped conducting elements forming inserts in said stacked insulating supports, first ends of said first pre-shaped conducting elements comprising input terminals at the first side of said stacked insulating supports for connection with said line wires, first ends of said second pre-shaped conducting elements comprising output terminals at the second side of said stacked insulating supports, and the second ends of said first and second pre-shaped conducting elements terminating at the third side of said stacked insulating supports in position to cooperate with a plug-in module, and at least one plug-in module cooperating with said second ends of said pre-shaped conducting element.

4,210,376

ELECTRICAL CONNECTOR RECEPTACLE

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 967,441, Dec. 12, 1978. This application Feb. 23, 1979, Ser. No. 14,442

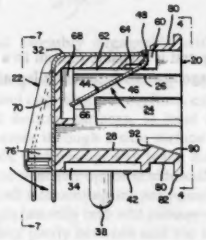
Int. Cl.[2] H05K *1/12;* **H01R** *23/10, 23/56*

U.S. Cl. 339—17 LC **10 Claims**

1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end through said housing between said one internal sidewall and the adjacent external sidewall and towards said rearward end, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

said plug-receiving end has a circumferentially continuous frame portion which surrounds plug-receiving opening,

conductor-receiving aperture means extending through said adjacent sidewall to said one internal sidewall, said conductor-receiving aperture means being spaced from said plug-receiving end and adjacent to said frame portion, said conductor-receiving aperture means communicating with said plug-receiving opening,



said conductors extending through said conductor-receiving aperture means, said contact springs extending into said plug-receiving opening from said conductor-receiving aperture means,

a plurality of side-by-side channels in said adjacent external sidewall extending from said conductor-receiving aperture means to said rearward end, said lead portions of said conductors extending across said adjacent external sidewall and being in said channels, said conductors extending from said adjacent external sidewall across said rearward end and having end portions which extend beyond the other one of said external sidewalls,

every other one of said conductors extending substantially normally from said adjacent external sidewall across said rearward end, the remaining conductors extending obliquely away from said adjacent external sidewall and across said rearward end whereby said end portions of said conductors are offset from each other.

4,210,377

ELECTRICAL PLUG PULL

Edward C. La Voque, 342 NE. 2nd Ct., Dania, Fla. 33004

Filed Jan. 5, 1979, Ser. No. 1,298

Int. Cl.[2] H01R *13/62*

U.S. Cl. 339—45 R **6 Claims**

1. A plug pull for removing a pronged electrical plug from an electrical socket, said plug pull having:

a thin insulating segment for engagement between the front of the socket and the body of the plug, said segment having openings therein which are shaped and dimensioned to pass the prongs on the plug for reception in the socket;

handle means connected to said segment and projecting therefrom outwardly past the plug to be grasped by the user for pulling the plug out of the socket;

said handle means comprising opposite, elongated, flexible legs extending from opposite sides of said thin segment for overlapping engagement with each other outwardly of the plug to form a loop handle to be grasped by the user;

at least one of said legs having an opening therein which is

elongated lengthwise of the leg, and the other of said legs having an outer end segment which is insertable through

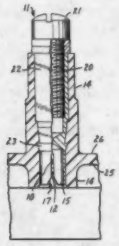
said opening and is turnable therein to a position in interlocking engagement with said one leg at said opening.

4,210,378

ELECTRICAL WIRE CONNECTION

Gary A. Baribeau, Troy Township, Saint Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 23, 1979, Ser. No. 32,385
Int. Cl.[2] H01R *9/08*
U.S. Cl. 339—97 R **7 Claims**



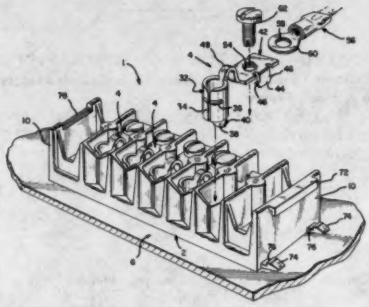
1. An electrical wire connection comprising:
an insulating connector body having a receptacle for a connector element,
an electrically conductive connector element within said receptacle, said element having an open-ended hollow cylindrical wire connecting end formed with a pair of identical opposed V-shaped wire entrance areas extending from the open end of said wire connecting end and leading into identical straight sided wire connecting slots running parallel to the axis of said wire connecting end,
an insulated electrical wire inserted into said wire connecting slots, said wire being inserted deeper into one slot than the other, having its insulation cut and the conductor thereof more deeply indented by the edges of said slot into which it is more deeply inserted and terminating a short distance outside of said connector element on the side thereof where it is more deeply inserted into said slot.

4,210,379

MODULAR BARRIER BLOCK

Vasantrai A. Vachhani, Kernersville; Melvin A. Soderstrom, Advance, and Richard L. Hughes, Clemmens, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1979, Ser. No. 20,774
Int. Cl.[2] H01R *13/56*
U.S. Cl. 339—101 **5 Claims**



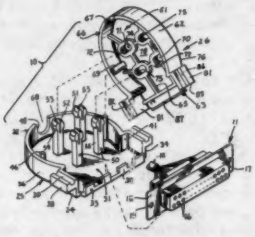
1. A barrier block for commoning electrical wires or for providing a junction point for incoming and outgoing wires, comprising:
a housing having individual partition walls with adjacent pairs of said walls being interconnected by an integral web,
an electrical terminal mounted on a respective web having a vertical hollow cylindrical barrel provided with a longitudinal slot divided into one or more pairs of opposed wire engaging and gripping jaws,
each said terminal having a second wire receiving contact connected to said barrel by an integral loop serving as a sloped wire stop at the entry of said barrel, and
strain relief flanges integral with said partition walls and having sides projecting diagonally toward each other to define a vertical wire receiving slot in alignment with said barrel slot.

4,210,380

CABLE CONNECTOR HOUSING HAVING STRAIN RELIEF SYSTEM

Melvin W. Brzostek, Bel Air, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 959,040
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—107 **5 Claims**



1. A housing which provides strain relief for a cable within a range of cross-sectional sizes which is assembled to a connector that is mounted to the housing, said housing comprising:
a first portion having a cable entrance end and a connector-input end and which includes a base having a plurality of

posts each having a slotted free end and projecting therefrom in a predetermined pattern between said cable entrance end and said input end, said pattern providing a plurality of cable paths which extend from said entrance end to said input end with a predetermined path for each cross-sectional size cable within a range of sizes which causes engagement of the cable with one or more of said posts to provide suitable strain relief for the cable during use; and

a second portion being mateable with the first portion to provide a mounting for the connector adjacent the input end and to provide an enclosure for a cable which extends from the connector along its predetermined path about the posts to the cable entrance end, said second portion including a cover having a plurality of apertures therethrough which are adapted to receive the posts when said portions are mated together, said apertures in the cover being stepped with a ledge formed between a smaller portion and a larger portion, said larger portion of each aperture opening to an external surface of the cover, said posts being such that when the portions are mated together, the slotted free end of each post is moved into an associated aligned aperture, is compressed, and as the slotted end of each post is moved into the larger portion of each aperture, it expands and snap-locks above the ledge to secure the portions together.

4,210,381

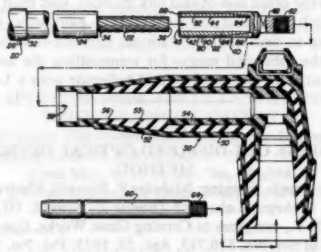
ELECTRICAL CONNECTOR CONTACTS

Alan D. Borgstrom, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,074

Int. Cl.[2] H01R *3/02*

U.S. Cl. 339—115 C **30 Claims**



1. An electrical connector contact element capable of being connected to a cable conductor constructed of a material having given thermal expansion characteristics throughout a range of operating temperatures, the contact element comprising:

a first portion constructed of a material having thermal expansion characteristics similar to those of the cable conductor, the first portion having a prescribed length and including means for connecting the conductor to the first portion;

a second portion constructed of a material having thermal expansion characteristics different from those of the cable conductor, the second portion including means for connecting the second portion to a further conductive member; and

means in the second portion surrounding and capturing the first portion within the second portion essentially along the entire length of the first portion such that the first and second portions are in intimate electrical connection and remain in such intimate electrical connection throughout the range of operating temperatures.

4,210,382

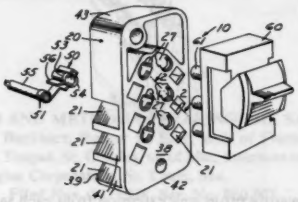
ELECTRICAL CONNECTOR AND HOUSING

Thomas L. Calbertson, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 23, 1979, Ser. No. 41,587

Int. Cl.[2] H01R *9/16*

U.S. Cl. 339—192 R **5 Claims**



1. An electrical assembly engageable with a contact pin comprising:

an insulating one-piece housing having a top surface, a bottom surface and opposing side surfaces extending between said top and bottom surfaces, at least one passageway extending therein through a side surface and terminating at an end wall, said passageway being bounded by a stop wall, a bottom wall and opposed sidewalls, a top aperture in said top wall intersecting sid passageway for admitting the contact pin laterally into said passageway, a transverse ramp extending partly between said top and bottom walls having a ledge facing said end wall and an inclined surface facing away from said end wall, and said transverse ramp including a recess extending longitudinally in said passageway across said transverse ramp;

a generally U-shaped electrical contact terminal for being longitudinally positioned within said passageway including a generally cylindrical socket portion having a pin receiving axis disposed laterally in said passageway in alignment with said top aperture, a forward end of said terminal being engageable with said end wall to stop forward movement in said passageway, a ferrule portion for securing a wire lead electrically connected to said terminal, a first leg of said U-shaped terminal extending forward from said ferrule portion to said forward end generally forming a first side of said socket portion, a second resilient leg of said U-shaped terminal, integrally extending rearward from the forward end of said first leg generally forming a second side of said socket portion, and terminating adjacent said ledge to retain said terminal in said passageway, and

said first and second legs having a flanged portion at said socket portion for guiding movement of the contact pin into said socket portion, said ramp extending generally parallel to said pin receiving axis of said socket portion and said recess being aligned to pass said flanged portion thus easing entry of said terminal into said passageway and preventing such excessive deflection and deformation which would occur if said flanged portion had to pass over said ramp.

4,210,383

CIRCUIT TEST CLAMP

David E. Davis, 1739 Grand Teton Dr., Milpitas, Calif. 95035

Filed Mar. 7, 1979, Ser. No. 18,467

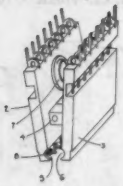
Int. Cl.[2] H01R *11/22*

U.S. Cl. 339—200 P **4 Claims**

1. An improved test clamp having a pair of oppositely disposed support members pivotally connected to one another, each said support member having a front and rear end, each said support member having a plurality of conducting elements extending longitudinally from a front to rear end of said support members, jaw-like clamping means disposed adjacent the front ends of said support members, and a resilient means

coacting with said support members for resiliently urging said jaw-like clamping means towards one another, wherein the improvement comprises:

an eyelet disposed at the rear end of each said conducting element,



an outwardly projecting extension from each said eyelet,

a recess extending transversely across each said support member exposing each said conducting element.

4,210,384

INVERTED-DESIGN OPTICAL MICROSCOPE

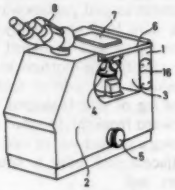
Manfred Meyer, Heidenheim; Willi Keydell, Oberkochen; Friederich K. Möllring, Aalen, and Klaus Weber, Koenigsbronn, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Continuation of Ser. No. 820,260, Jul. 29, 1977, abandoned. This application May 17, 1979, Ser. No. 40,080

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 2640974

Int. Cl.[2] G02B *21/22*

U.S. Cl. 350—19 **12 Claims**



1. An inverted optical microscope, comprising a unitary closed housing of generally U-shape and characterized by a horizontal base portion and by two integrally related spaced upstanding legs and defining an interior space for optical elements and ray paths, optical elements contained within and carried by said housing, a rugged specimen table resting on spaced points on the upper ends of said legs and spanning the space between and interconnecting said legs, whereby said housing and thus-connected table exhibit the mechanically stable form of a right parallelepiped with a side-access opening in the space between said legs, lens-carrier means vertically adjustably carried by said housing within the space between said legs and beneath said specimen table, observation-tube means mounted on the top of one of said legs and providing ray connection with the optical elements within said housing as well as an unimpeded direct view of a specimen on said specimen table, said direct view being over said observation-tube means upon slight shifting of an observer's line of sight without substantial head movement, and light-source mounting means on the other of said legs for mounting a specimen-illuminating light source external to said housing.

4,210,385

OPTICAL PANORAMIC SURVEY-SYSTEMS

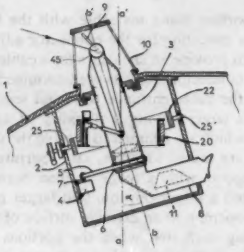
Jean-Jacques Baudot, Ville d'Avray, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 21, 1978, Ser. No. 879,362

Claims priority, application France, Feb. 23, 1977, 77 05215

Int. Cl.[2] G02B *23/02*

U.S. Cl. 350—16 **5 Claims**



1. A device for stabilizing the site of the sight line in an optical panoramic survey system carried by a vehicle, said system comprising a sighting tube rotatably mounted in the vehicle, driving means secured to the vehicle for rotating the tube about the optical axis thereof, and a reflector disposed at the top of the tube and rotatable about an axis normal to the optical axis, comprising a circular guideway, support means attached to the vehicle for supporting said guideway while holding vertical the axis thereof, a member guided along said guideway, a vertically adjustable member supported by said guided member, a link member with a variable length pivotally connected at one end to said adjustable member, a shaft secured to the other end of said link member, said shaft having an axis which intersects the axis of said guideway, means for imparting to said shaft a rotational movement identical with that of the tube, and means for transmitting the angular displacement from said shaft to said reflector with a 1:2 ratio.

4,210,386

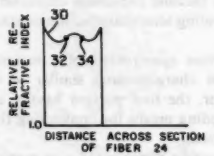
FLUORINE OUT-DIFFUSED OPTICAL DEVICE AND METHOD

Roger J. Araujo, Corning; Nicholas F. Borrelli, Elmira; John D. Crow, Mohegan Lake, and Thomas P. Seward, III, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 570,713, Apr. 23, 1975, Pat. No. 3,981,707. This application Jun. 1, 1976, Ser. No. 691,591

Int. Cl.[2] G02B *5/14*

U.S. Cl. 350—96.31 **1 Claim**



1. An optical waveguide comprising an elongated fluorine containing silicate glass fiber, the concentration of fluorine in said fiber gradually increasing from a first level at the optical axis of said fiber to a second level that is higher than said first level at some radius within said fiber so that the refractive index distribution throughout the length of said fiber, in a plane perpendicular to the fiber optical axis, progressively decreases from a first value at the optical axis of said fiber to a second

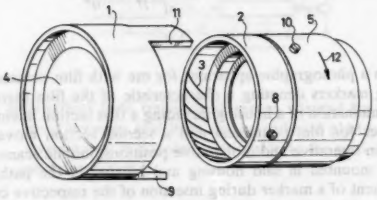
value that is lower than said first value at some radius within said fiber, and wherein the concentration of fluorine in said fiber gradually decreases from said second level to a level lower than said second level at the outside surface of said fiber so that the refractive index distribution throughout the length of said fiber, in a plane perpendicular to the fiber optical axis, progressively increases from said second value of refractive index to a value of refractive index higher than said second value at the outer surface of said fiber.

4,210,387

FOCUS DEVICE FOR ZOOM LENS

Ryota Ogawa, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,638
Claims priority, application Japan, Apr. 21, 1978, 53/47474
Int. Cl.² G02B *7/04, 15/18*
U.S. Cl. 350—187 **5 Claims**



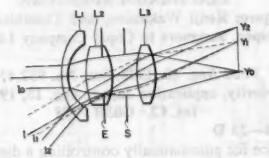
1. In a focussing device for a zoom lens including a lens mount barrel, a focussing member, a variator member, and a stopper defining a short distance photographing limit for said focussing member, the improvement comprising; means for moving said stopper in cooperation with said variator member, whereby in a particular range of a focal distance of the zoom lens said short distance photographing limit is advanced in the extreme short distance photographing direction to facilitate extreme close-up photographing with said zoom lens.

4,210,388

LARGE-APERTURE WIDE-ANGLE LENS SYSTEM FOR PHOTOGRAPHIC CAMERAS

Yoshitsugi Ikeda, Hachiouji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 8, 1978, Ser. No. 884,544
Claims priority, application Japan, Mar. 14, 1977, 52/27700
Int. Cl.² G02B *9/64*
U.S. Cl. 350—214 **7 Claims**



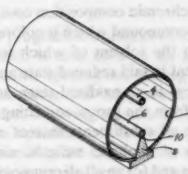
1. A retrofocus type large-aperture wide-angle lens system for photographic cameras comprising a front diverging lens group, a middle converging lens group, a rear converging lens group, an aperture stop arranged between said middle converging lens group and said rear converging lens group and a flare stop which is arranged in the middle converging lens group before said aperture stop and in the vicinity of the intersecting point between the maximum aperture ray of the paraxial pencil among the rays passing through the lens system and the outermost ray of the offaxial pencil directing to the marginal portion of image and has an effective radius equal to the distance as measured from the optical axis to said intersecting point.

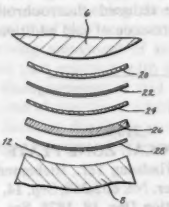
4,210,389

BOND AND METHOD OF MAKING THE SAME

Gordon H. Burkhart; Robert R. Rice, both of Florissant, and James R. Teague, St. Charles, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 14, 1978, Ser. No. 960,571
Int. Cl.² H01S *3/00;* G02B *5/12;* H01L *23/02;* B23K *1/00*
U.S. Cl. 350—321 **18 Claims**





1. In combination with a crystalline or vitreous optical element that is subjected to significant optical power and a solid heat sink for conducting heat away from the optical element, an improved bond between the optical element and the heat sink for securing the optical element to the heat sink, said bond comprising: a reflective layer located directly against and adhered to the surface of the optical element, the reflective layer being highly reflective to radiation in the region of the spectrum at which the optical element operates; a solder layer between the reflective layer and the heat sink; and a barrier layer between the solder layer and reflective layer and being adhered to the reflective layer, the barrier layer being substantially impervious to the solder of the solder layer so that the solder does not penetrate it and scavenge the reflective layer.

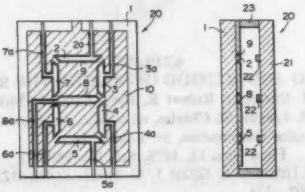
12. A method of attaching a crystalline or vitreous optical element to a heat sink that is capable of conducting heat away from the optical element, said method comprising applying a reflective layer of metal to the crystalline or vitreous surface of the optical element, the reflective layer being highly reflective as to radiation in the region of the spectrum at which the optical element operates; applying a barrier layer to the reflective layer; placing a solder material between the barrier layer and the heat sink; and melting the solder layer to create a bond in the form of a solder layer between the barrier layer and the heat sink, the barrier layer being substantially impervious to the solder of the solder layer so that the reflective layer remains isolated from and unaffected by the solder.

4,210,390

ELECTROCHROMIC COMPOSITION AND ELECTROCHROMIC DISPLAY DEVICE USING SAME

Masachika Yaguchi, Yokohama, Japan, assignor to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Jun. 27, 1978, Ser. No. 919,607
Claims priority, application Japan, Jun. 28, 1977, 52-76114; May 22, 1978, 53-60721
Int. Cl.[2] G02F 1/17; G09F 9/30
U.S. Cl. 350—357 32 Claims



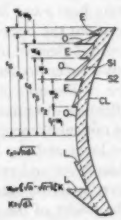
1. An electrochromic composition comprising a solvent, an electrochromic compound which is colored in a reduced state, the solubility to the solvent of which is not less than 10^{-2} mol/100 g-solvent in said reduced state and not less than 10^{-1} mol/100 g-solvent in an oxidized state, and an additive compound selected from the group consisting of (a) ammonia, (b) an amine where all substituents thereof are radicals selected from the group of aliphatic radicals, alicyclic radicals and aromatic radicals and (c) an alkali compound selected from the group consisting of hydroxides, carbonates, and phosphates, said electrochromic compound occurring in said reduced state and the solution of the reduced electrochromic compound being basic due to the presence of said additive compound.

4,210,391

MULTIFOCAL ZONE PLATE

Allen L. Cohen, 10108 Windsong Ter., Richmond, Va. 23233

Continuation-in-part of Ser. No. 833,368, Sep. 14, 1977, Pat. No. 4,162,122. This application Dec. 18, 1978, Ser. No. 970,751
Int. Cl.[2] G02B 3/08, 5/18; G02C 7/04
U.S. Cl. 351—161 15 Claims



1. A multiple focal power optical device comprising:

body means having a plurality of alternating odd and even, annular, concentric zones, bounded on the outside of radii r_n, with n=1,3,5, . . . , for the odd zones and n=2,4,6, . . . , for the even zones;

first focal power means within at least some of the odd zones for directing incident parallel light to a first focal point;

second focal power means within at least some of the even zones for directing incident parallel light to a second focal point different from said first focal point;

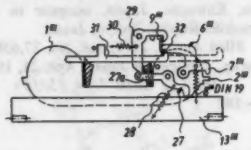
wherein the radii r_n of said odd and even zones are substantially proportional to square root of n.

4,210,392

PHOTOGRAPHIC APPARATUS

Günter Fauth, Unterhaching, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 783,344, Mar. 31, 1977, abandoned.
This application Dec. 13, 1978, Ser. No. 969,152
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1976, 2614527
Int. Cl.[2] G03B 7/00
U.S. Cl. 354—21 7 Claims



1. In a photographic apparatus for use with film containers having markers denoting a characteristic of the film therein, the combination of a housing including a first section having a chamber for film containers and a second section movable between operative and inoperative positions; mobile scanning means mounted in said housing and located in the path of movement of a marker during insertion of the respective container into said chamber so that said scanning means is moved by and bears against the marker in response to insertion of such container; and means for disengaging said scanning means from the marker in a container in said chamber and for maintaining said scanning means out of contact with the marker during exposure of film in the container which is confined in said chamber, including a first member movable relative to said second section between first and second positions, a displaceable second member mounted in said first section and located in the path of and being displaced by said second section during movement to said operative position, and a third member movable by said second member to an operative position in response to displacement of said second member by said second section, said scanning means being located in the path of movement of one of said members and being disengaged from the marker in said chamber, moved into engagement with and held by another of said members during movement of said first member from said first to said second position.

4,210,393

DEVICE FOR AUTOMATICALLY CONTROLLING DIAPHRAGM APERTURE

Yasuo Ishiguro; Kenji Wakazono, and Toshihisa Saito, all of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,476
Claims priority, application Japan, Aug. 15, 1977, 52/97014
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—23 D 5 Claims

1. A device for automatically controlling a diaphragm aperture, comprising:

an exposure information pulse generation circuit for generating a pulse in a number corresponding to an aperture value to be controlled obtained based on exposure informations such as a scene brightness or the like,

a first counter circuit for counting the output of said exposure information pulse generation circuit,

an aperture value pulse generation circuit for generating pulses in a number corresponding to an aperture value of a diaphragm stopped down in association with a diaphragm drive,

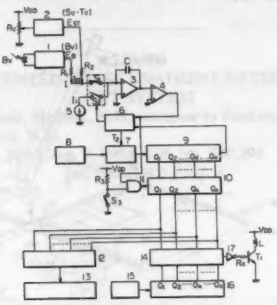
diaphragm fixing means for fixing said diaphragm aperture, said diaphragm fixing means being actuated when an

aperture value pulse number is coincident with an exposure information pulse number;

said aperture value pulse generating circuit including:

a light source,

a photoresponsive element, and



intermittent light transmitting means adapted for movement between said light source and said photoresponsive element in coupled relationship to the activation of said diaphragm.

4,210,394

SHUTTER TIME TEMPERATURE COMPENSATING DEVICE IN A CAMERA

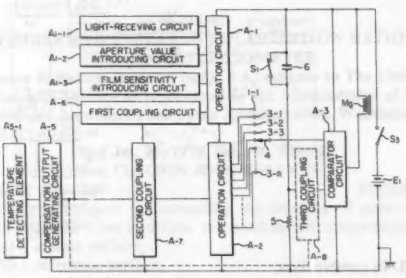
Akihiko Sato, Tokyo, and Tetsuro Goto, Funabashi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,304

Claims priority, application Japan, Sep. 20, 1977, 52-112200

Int. Cl.[2] G03B 9/62

U.S. Cl. 354—234 **18 Claims**



1. A device for compensating for the shutter time temperature characteristic of a camera shutter mechanism controlled by an electrical voltage, comprising means for detecting ambient temperature variations, and control means connected to the detecting means for generating a control voltage dependent upon the ambient temperature and the shutter time temperature characteristic of the shutter mechanism for controlling the shutter mechanism to substantially eliminate time variations in the shutter mechanism due to temperature.

4,210,395

ELECTRONIC PROGRAMMED SHUTTER

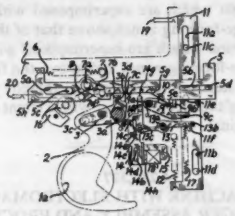
Kiyoshi Kitai, and Hiroaki Ishida, both of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1978, Ser. No. 961,733

Claims priority, application Japan, Nov. 18, 1977, 52/154880

Int. Cl.[2] G03B 9/08

U.S. Cl. 354—234 **2 Claims**



1. In an electronic programmed shutter of the type having a moveable sector which is also used as an aperture vane: a pivotably mounted sector opening and closing lever for effecting movement of said sector and being normally biased in the sector-closing direction, a driving member moveable in a linear direction by a release operation of the shutter, an electromagnetic device for controlling the closing time of the shutter by an electronic switching circuit, and a driving lever movably supported on said driving member and having a first part engageable with said sector opening and closing lever to pivot the same in the sector-opening direction to thereby effect opening movement of said sector to initiate an exposure in response to driving movement of said driving member and having a second part coacting with said electromagnetic device to effect disengagement of said driving lever from said sector opening and closing lever which thereafter pivots in the sector-closing direction due to the normal bias applied thereto to effect closing movement of said sector to thereby terminate the exposure.

4,210,396

ELECTROPHOTOGRAPHIC METHOD AND APPARATUS

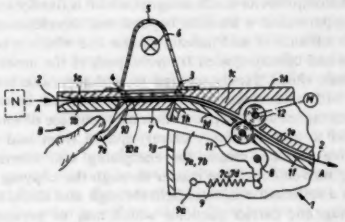
Jürgen Müller; Alfred Rheude, both of Munich, and Josef Pfeifer, Unterhaching, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,302

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713335

Int. Cl.[2] G03G 15/00; G03B 27/02

U.S. Cl. 355—12 **31 Claims**



22. Apparatus for imaging a sheet-like original having at least two types of image-forming zones of different light-absorptive properties onto a selected portion of a dielectric receptor sheet having at least one stratum consisting of a mate-

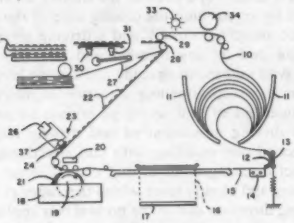
rial selected from the group consisting of polyvinyl chloride and polyethylene terephthalate, comprising a housing having a light-transmitting window for said selected portion of the receptor sheet; means for maintaining one side of the selected portion of the receptor sheet in said window in contact with the original; and a source of electromagnetic radiation operative to illuminate said window and the original with an intensity and for an interval of time which are sufficient for raising the temperature of those regions of said selected portions of said receptor sheet which are superimposed with one of the types of the image-forming zones above that of the regions of said selected portion which are superimposed with the other type of the image-forming zones and above the freezing temperature of the material of the stratum, to thereby provide said selected portion of the receptor sheet with a latent electrostatic image of the original.

4,210,397

COPYING MACHINE WITH ELECTROMAGNETIC SCAVENGER ASSEMBLY AND PROCESS

Paul J. Macaluso, Norwalk, and Lawrence E. Clifford, Danbury, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 13, 1978, Ser. No. 960,460
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—15 **11 Claims**



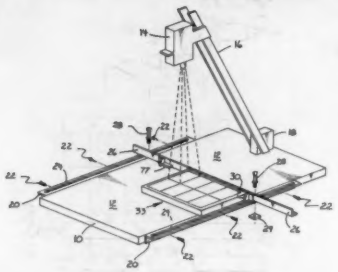
1. In an electrostatic copying apparatus comprising a continuous photoresponsive master, means for moving said master through a copying cycle comprising a charging station in which the photoresponsive surface of the master is provided with an electrostatic charge, an exposure station in which the charged surface is exposed to the light image of an imaged original sheet being copied, whereby the electrostatic charge is removed from said surface except in latent image areas exposed to the imaged areas of said original, a development station in which said latent image areas are developed by means of toner powder present in a two-component comosition comprising said toner powder and magnetic carrier particles, and an image-transfer station in which said developed images are transferred to a copy sheet and fused thereon, the improvement which comprises an electromagnet which is fixedly attached to said apparatus at a location beyond said development station and in advance of said transfer station and which is positioned across and closely-spaced from the path of the master, a non-magnetic shield fixedly secured to said apparatus and associated with said electromagnet and positioned between said electromagnet and the photoresponsive surface of said master, parallel to and uniformly closely-spaced from said photoresponsive surface; means for energizing said electromagnet during movement of the master through the copying cycle to create a sufficient magnetic field through said shield to attract any magnetic carrier particles which may be present on the surface of said photoresponsive master from said master to the adjacent collection surface of said shield, and means for de-energizing said electromanget after said copying cycle is completed to discontinue said magnetic field in the area of said shield to cause said magnetic particles to be released from the collection surface of the shield.

4,210,398

PHOTOGRAPHIC PRINTING APPARATUS

William H. Baskin, 4634 RIvercliff Dr., Lilburn, Ga. 30247

Filed Jun. 6, 1978, Ser. No. 913,047
Int. Cl.[2] G03B *27/44*
U.S. Cl. 355—54 **7 Claims**



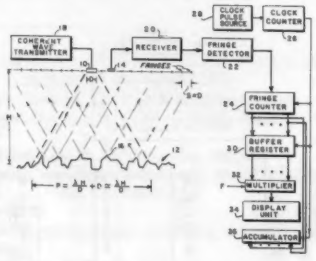
1. Photographic printing apparatus for printing a montage of images and comprising, in combination, a baseboard above which an enlarger may be positioned; a guide mounted atop said baseboard; an easel having an easel base upon which photographic printing paper may be supported, (and) a mask defining an aperture, and means for mounting said mask (mountable) upon said base in a plurality of orientations; and means for locating said easel at a plurality of positions along said guide atop said baseboard.

4,210,399

SYSTEM FOR RELATIVE MOTION DETECTION BETWEEN WAVE TRANSMITTER-RECEIVER AND IRREGULAR REFLECTING SURFACE

Atul Jain, 1545 E. Mendocino Dr., Altadena, Calif. 91001

Continuation-in-part of Ser. No. 758,637, Jan. 10, 1977, abandoned, which is a continuation of Ser. No. 601,791, Aug. 4, 1975, abandoned. This application Feb. 21, 1978, Ser. No. 879,046
Int. Cl.[2] G01P *3/36*
U.S. Cl. 356—28.5 **8 Claims**



1. In combination,

means for transmitting a beam of coherent waves of energy of known wavelength, λ, from a single source towards a reflecting surface through an aperture of known dimension, D, given by the relationship $P=(\lambda H/D)+D$, where P is the width of the beam on the reflecting surface and H is the distance from the reflecting surface to the aperture,

means for receiving coherent waves of energy from said beam reflected by scattering points on said surface at a known distance, H,

means for detecting the finest interference fringes between reflected waves of energy from said scattering points by

said receiving means, where said fringes have a spacing $S=\lambda H/P$, and

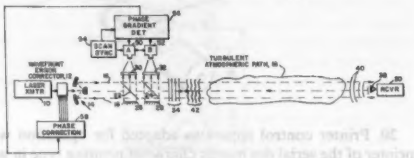
means for counting each interference fringe detected as a measure of the extent of relative motion between said surface and said receiving means, said measure being equal to the number of fringes detected times the fringe spacing S.

4,210,400

NON-SEGMENTED PHASE GRADIENT DETECTOR FOR COAT SYSTEM

Victor A. Misek, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Sep. 7, 1978, Ser. No. 940,794
Int. Cl.[2] G01B 9/02
U.S. Cl. 356—359 **2 Claims**



1. Apparatus for the detection of wavefront distortion in a transmitted coherent beam propagating through the atmosphere from a transmitting site to a remote location comprising:

means at said remote location for returning a part of the incident energy back to the transmitting site over the same path through the atmosphere as the transmitted beam;

means for optically heterodyning said returned energy with a coherent beam of the same optical frequency as that of said transmitted beam so as to produce an interference pattern; and

means for optically measuring the phase gradients of said returned energy in terms of the interference fringes of said interference pattern, wherein said measuring means further comprises

means for producing an interference pattern which includes means for producing two such patterns with one pattern phase shifted by 90° with respect to the other and wherein said optical measuring means includes two such devices, each for scanning a different interference pattern, and means for synchronizing the scans of said two devices.

4,210,401

VISIBLE AND INFRARED POLARIZATION RATIO SPECTROREFLECTOMETER

Carmen E. Batten, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 28, 1978, Ser. No. 929,087
Int. Cl.[2] G01N 21/40; G01J 4/00
U.S. Cl. 356—369 **10 Claims**

1. An instrument for measuring the intensity of polarized light reflected from a surface, the combination comprising:

(a) a sample surface;

(b) a reference surface;

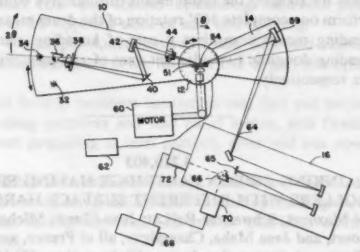
(c) multiple light sources;

(d) light selection and chopping means for selecting the light from one of said multiple light sources, chopping the light signal at a predetermined frequency, and focusing the light onto said sample surface;

(e) continuously rotating light polarizing means positioned between said sample surface and said light selection and chopping means and wherein said continuously rotating light polarizing means continuously changes the plane of polarization of the light from 0° to 360°;

(f) detection means for selectively sensing and analyzing light reflected from said sample surface and said reference surface;

(g) sample spinner means connected to said light selection and chopping means and positioned between said light selection and chopping means and said detection means for supporting said sample surface and said reference surface; and



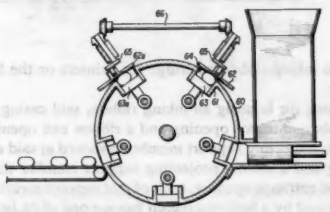
(h) aligning means for automatically aligning said light selection and chopping means, said sample spinner means, and said detection means while the angle of incidence is changed continuously or otherwise, so that the light from said light selection and chopping means upon striking said sample surface will reflect from said sample surface and impinge on said detection means.

4,210,402

APPARATUS FOR DIVIDING AND KNEADING A PIECE OF DOUGH

Herbert Schroder, and Reinhard Schroder, both of 8623 Staffelstein, Ofr., Angerstrasse 5, Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 603,123, Aug. 8, 1975, Pat. No. 4,013,275. This application Dec. 8, 1976, Ser. No. 748,505
Int. Cl.[2] A21C 7/06
U.S. Cl. 366—76 **2 Claims**



1. An apparatus for separating and kneading portions of dough including drum means rotatably mounted on a frame for rotating step-by-step in a constant direction of rotation; means connected to said drum means for performing the step-by-step rotation, said drum means including a plurality of circumferentially spaced measuring chambers; dough supply means adjacent the outer circumference of said drum means for periodic alignment with the respective measuring chambers; kneading means adjacent the periphery of said drum means in circumferentially spaced relation to the supply means for engaging and kneading dough in the measuring chambers; an exit portion adjacent the outer periphery of the drum means in circumferentially spaced relation to the supply means and the kneading means, to receive and remove kneaded dough from the drum means, said drum means having an inactive period, between two rotational steps, for said supply means to direct a portion of dough into a first of said measuring chambers, for the kneading means to engage and knead dough in another of said mea-

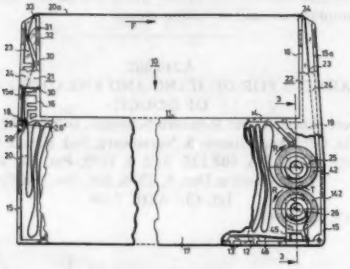
suring chambers, and for kneaded dough to be removed from still another measuring chamber at said exit portion; each of said measuring chambers including measuring-flask means, and control means for controlling adjustment of said measuring-flask means within said chambers during said step-by-step rotation of the drum means, wherein said drum means consists of five of said circumferentially spaced measuring chambers, said means for performing said step-by-step rotation consists of means for rotating the drum means through five equal steps to perform one complete 360° rotation of the drum means and the kneading means comprises a pair of kneading elements for kneading dough in two adjacent ones of said measuring chambers respectively.

4,210,403

INKING RIBBON CARTRIDGE HAVING FEED ROLLERS WITH DIFFERENT SURFACE HARDNESS

Joel Mazouet, Schweitzer-Belfort; Jean-Claude Michaux, Hericourt, and Jean Mahe, Champigny, all of France, assignors to Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 25, 1978, Ser. No. 899,723
Claims priority, application France, May 17, 1977, 77 15118
Int. Cl.[2] B41J *33/10*
U.S. Cl. 400—196.1 **7 Claims**



1. An inking ribbon cartridge for printers or the like, comprising:

a casing for housing an inking ribbon, said casing having a ribbon entrance opening and a ribbon exit opening;

a first projecting support member disposed at said exit opening and a second projecting support member disposed at said entrance opening, each of said support members being formed by a hollow conduit having one of its two ends in communication with said casing;

said inking ribbon being received within said casing and arranged in random loops, said ribbon passing through said support members and extending across the open space between the other ends of said support members, said ribbon having two faces, one of which is inked;

guiding and friction means disposed inside said first support member for providing a substantially constant drag force on said ribbon; and

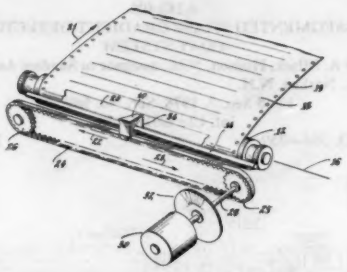
ribbon transport means arranged inside said casing for translating said ribbon from said exit opening to said casing via said support members and said entrance opening, said transport means including a rotatably supported drive roller and an idler pressure roller for engaging said ribbon therebetween, each of said rollers comprising at least a ring made of resilient elastomeric material, the hardness of the elastomeric material forming the ring of said drive roller being different from that of the elastomeric material forming the ring of said pressure roller.

4,210,404

PRINTHEAD COMPENSATION ARRANGEMENT FOR PRINTER

William A. Hanger, Churchville, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Nov. 1, 1977, Ser. No. 847,569
Int. Cl.[2] B41J *3/12, 19/32*
U.S. Cl. 400—124 **27 Claims**



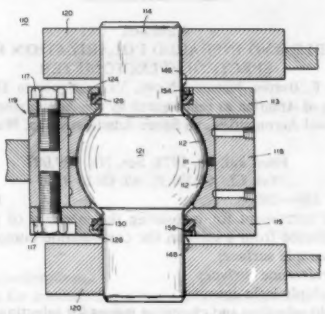
20. Printer control apparatus adapted for operation with a printer of the serial dot matrix character printing type in which a printing head having selectively actuable matrix printing elements moves along the line to be printed, comprising a sensor for providing output pulses indicative of such head movement, a print control counter responsive to sensor output pulses for controlling the print line locations where the actuating of printing elements is effected, the available number of sensor output pulses per character being greater than the maximum number of matrix element positions available to make up a character, and compensating means responsive to signals representative of the mechanical actuation characteristics of the motion of said printing head along said print line for applying additional pulses to said control counter.

4,210,405

PIVOT JOINT

Ronald M. Jesswein, Buchanan, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 20, 1978, Ser. No. 962,450
Int. Cl.[2] F16J *15/00*
U.S. Cl. 403—158 **10 Claims**



1. A pivot joint comprising an outer structure having an opening for receiving a pivot pin, said outer structure including a bushing, a pivot pin located in said opening in bearing contact with said bushing, said pivot pin having a cylindrical portion means for retaining lubricant between said pin and said outer structure including an internal annular groove in said outer structure and an elastomeric sealing member retained in said groove in sealing relation with the cylindrical portion of

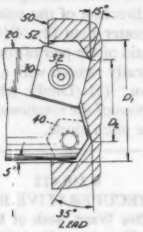
said pin, said outer structure forming an annular gap with said pivotal pin axially outwardly of said annular groove and extending radially outwrdly of said sealing member, and said outer structure including a relief opeing extending from adjacent the outer diameter of said groove through said outer structure to the outside of the joint.

4,210,406

DRILL WITH REPLACEABLE INSERTS

Robert W. Berry, Jr., Hazel Park, Mich., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 938,765
Int. Cl.[2] B23B *51/00*
U.S. Cl. 408—223 **3 Claims**



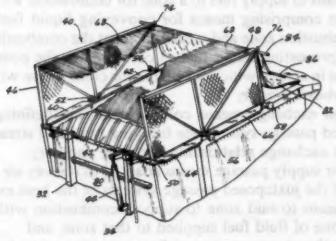
1. A drill comprising a body having a working end and a drive end with chordal support surfaces adjacent recesses in the working end distributed circumferentially about the axis of the body, cutting inserts retained on said support surfaces having cutting edges disposed toward and projecting from the cutting end of said body, said cutting edges being radially spaced conjointly to sweep the entire area of a working piece to be drilled and dimensioned wherein each cutting edge sweeps a substantially equal area of the entire area to be drilled, said inserts being indexable, wafer-like inserts of hard metal including a square insert disposed to cut the central portion of the entire area to be drilled and a hexagonal insert to cut a circumferential area outside the central portion.

4,210,407

LITTER CONTROL ASSEMBLY

Roy F. Broyhill, and James R. Parsons, both of Dakota City, Nebr., assignors to The Broyhill Manufacturing Company, Wayne, Nebr.

Filed Jun. 7, 1978, Ser. No. 913,515
Int. Cl.[2] B65F *3/02*
U.S. Cl. 414—407 **7 Claims**



1. In combination,

a wheeled refuse collection vehicle having a refuse collection box mounted thereon, said box having an opening formed therein to permit collected refuse to be placed in the interior of said box,

and a litter control assembly mounted on said vehicle adjacent said box opening,

said litter control assembly comprising means for permitting refuse to be passed therethrough during the collection thereof and for maintaining the refuse within said box,

said box opening having rearward and forward ends and opposite sides and wherein said litter control assembly comprises first and second upstanding members positioned at the opposite sides of said box opening,

a panel means positioned between said first and second upstanding members at the forward end of said box opening,

elongated flexible members secured to said first and second upstanding members and said panel means, said flexible members extending at least partially over said box opening,

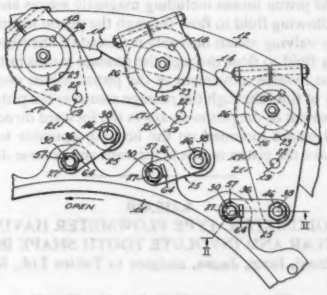
and a flexible sheet member secured to said box rearwardly of said box opening and secured to said upstanding members for closing the rearward end of said litter control assembly.

4,210,408

ECCENTRIC PIN POSITIVE LOCKING DEVICE FOR HYDRAULIC TURBINE WICKET GATES

Donald W. Nace, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 30, 1978, Ser. No. 956,093
Int. Cl.[2] F03B *3/18*
U.S. Cl. 415—163 **7 Claims**



1. In an operating mechanism for a wicket gate of a hydraulic turbine having wicket gate operating ring:

a bore in the wicket gate operating ring;

an eccentric pin having a cylindrical eccentric body portion the axis of which is offset but parallel to the axis of said pin, said cylindrical eccentric body portion being disposed within said bore of the wicket gate operating ring;

a wicket gate drive link operably connected to effect movement of said wicket gate, said drive link being secured to said eccentric pin to be driven thereby;

a sleeve nut mounted on said eccentric pin in abutting engagement with said drive link;

locking means engaged on said eccentric pin in engagement with said sleeve to lock said sleeve nut and said drive link to said eccentric pin;

removable means operating between said sleeve nut and said eccentric pin and operable to prevent relative rotational movement between said sleeve nut and said eccentric pin; and,

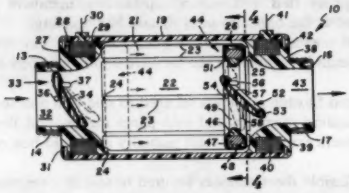
means to secure said sleeve nut in an adjusted radial position and thereby maintain said eccentric pin in an adjusted radial position.

4,210,409

SOLENOID OPERATING PUMP

Frank W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Eagle Bend, Minn.

Filed May 19, 1978, Ser. No. 907,809
Int. Cl.[2] F04B 17/04, 21/04; F04F 7/00
U.S. Cl. 417—241 38 Claims



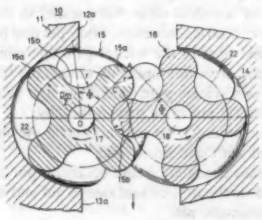
1. A pump for moving a fluid comprising: a housing including a body having an inside wall surrounding a chamber, a plurality of longitudinal ribs on said inside wall, a first end having inlet passage means open to the chamber, and a second end having outlet passage means open to the chamber; first one-way valving means cooperating with the first end to allow forward flow of fluid through the inlet passage means into the chamber and restrict reverse flow of fluid through the inlet passage means out of the chamber; piston means located in the chamber movable in a forward direction to move fluid out of the chamber through the outlet passage means and allow fluid to flow into the chamber through the inlet passage means and movable in a reverse direction toward the first one-way valving means, said ribs spacing the piston means from the inside wall, said piston means including magnetic means and passage means allowing fluid to flow through the piston means; second one-way valving means movably mounted on the piston means allowing fluid to flow through the passage means in the piston means on reverse movement of the piston means and restricting flow of fluid through the passage means in the piston means on movement of the piston means in the forward direction; and solenoid means mounted on the housing operable to sequentially move the piston means in forward and reverse directions.

4,210,410

VOLUMETRIC TYPE FLOWMETER HAVING CIRCULAR AND INVOLUTE TOOTH SHAPE ROTORS

Iwao Ohtani, Inagi, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Apr. 14, 1978, Ser. No. 896,671
Claims priority, application Japan, Nov. 17, 1977, 52-138231; Nov. 22, 1977, 52-140292
Int. Cl.[2] G01F 3/10; F01C 1/16; F04C 1/10
U.S. Cl. 418—150 3 Claims



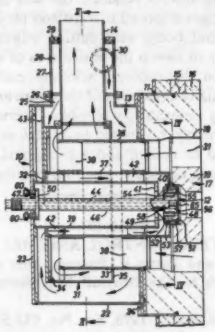
1. In a volumetric type flowmeter having a pair of rotors each of which has a plurality of teeth comprising tooth crests and valleys alternately disposed at equal angular intervals around the rotor in profile in a cross-sectional plane thereof perpendicular to the rotational axis thereof, said rotors being adapted to rotate in mutually opposite directions in mutually intermeshed state, in each rotor as viewed in said profile in said cross-sectional plane, said tooth crests and valleys respectively having convex and concave arcuate parts over specific peripheral extents thereof centered on the vertices and nadirs thereof, respectively, and remainder parts of involute curve shape between the extremities of said arcuate parts, the improvement comprising: each of said specific peripheral extents of the tooth crests and valleys being peripheral length of an arc of a circle with the center thereof on the pitch circle of said teeth, said arc having an angular extent of $(180-\alpha)$ degrees, α being the pressure angle, and having a central point coinciding with the tooth crest vertex in the case of a tooth crest and with the nadir point in the case of a valley; the number of said teeth being 4, and the pressure angle α being selected at a value in the range of $21° < \alpha < 30°$; each tooth of each rotor being helically twisted in shape with a total winding angle Φ with respect to the rotational axial direction of the rotor, said angle Φ is selected at a value greater than $(2\pi/4)(1-x)$, where x is the transverse contact ratio of the pair of rotors; and each tooth of each rotor being helically twisted with a helix angle ϕ selected at a value equal to $\cot^{-1}(2L/Dm\Phi)$, where L is the length of the rotor in the direction of the rotational axis thereof, and Dm is the diameter of the pitch circle.

4,210,411

SELF-RECUPERATIVE BURNER

Trevor Ward, and Clive Ward, both of Little Royd Mill, Low Road, Earlsheaton, Dewsbury, Yorkshire, England

Filed Jan. 20, 1978, Ser. No. 871,063
Claims priority, application United Kingdom, Jan. 21, 1977, 2445/77
Int. Cl.[2] F23D 11/44
U.S. Cl. 431—160 21 Claims



1. Self recuperative fluid fuel burner including:

(a) means to supply fuel to a zone for combustion within that zone comprising means for conveying liquid fuel to the combustion zone and means adjacent the combustion zone for presenting liquid fuel so conveyed to the combustion zone in a form which is suitable for combustion within the combustion zone;

(b) heat exchange means comprising means defining juxtaposed passage systems for bringing two fluid streams into heat exchange relationship with one another;

(i) air supply passage means adapted to convey air via one of the juxtaposed passage systems of the heat exchange means to said zone to support combustion within that zone of fluid fuel supplied to that zone; and

(ii) exhaust passage means for conveying away from said zone products of combustion within that zone, said exhaust passage means being adapted to convey such products of combustion through another of the juxtaposed passage systems of said heat exchange means whereby air supplied to said zone by said air supply passage means is heated within the burner before reach-

ing said zone by heat exchange in said heat exchange means with products of combustion within said zone;

(c) means surrounding the liquid fuel conveying means to convey heat away from same and to shield said conveying means from direct contact with combustion air heated by said heat exchange means thereby preventing overheating of the liquid fuel before it reaches said means for presenting liquid fuel to the combustion zone.

4,210,412

METHOD OF TRANSFER PRINTING FOR CELLULOSIC FIBER-CONTAINING TEXTILE PRODUCT

Kiyoshi Yamane; Shunzo Abe; Shuzo Sawada, and Hatsuo Matsumoto, all of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Jul. 23, 1973, Ser. No. 381,562
Claims priority, application Japan, Jul. 25, 1972, 47/74845
Int. Cl.[2] D06P *1/00*
U.S. Cl. 8—471 2 Claims

1. A method of transfer printing for a cellulosic fiber-containing textile article which comprises pretreating the article with a 5–40 weight % aqueous solution of dispersion of a swelling agent selected from the group consisting of alkylene glycols, alkylene glycol mono- and di-ethers, alkylene glycol mono- and di-esters, alkylene glycol ether esters, polyalkylene glycols having an average molecular weight of 200–5000, polyalkylene glycol mono- and di-ethers having an average molecular weight of 200–5000 and polyalkylene glycol mono- and di-esters having an average molecular weight of 200–5000, all having a boiling point not lower than 150° C., squeezing the pretreated article to a wet pick-up of 50–100%, subjecting the squeezed article to drying at a temperature below 120° C., superposing the dried article with a transfer sheet printed with an ink containing a sublimable disperse dye having a molecular weight no greater than 394, pressing the resultant assembly under heating to transfer the dye of the transfer sheet onto the article and subjecting the dyed article to a cross-linking treatment in a bath containing a cross-linking agent and a catalyst.

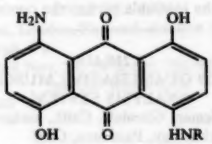
4,210,413

TRANSFER PRINTING PROCESS

Günter Gehrke, Cologne, and Walter Hohmann, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,843
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714768
Int. Cl.[2] D06P *5/06*
U.S. Cl. 8—471 1 Claim

1. In the process of transfer printing in which a temporary support is printed with a sublimable dyestuff and the dyestuff is transferred by heat from the temporary support to a substrate, the improvement comprising using as the dyestuff a dyestuff of the formula



in which
R is isopropyl.

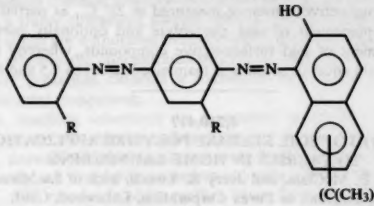
4,210,414

DYE MIXTURES FOR COLORING MINERAL OIL PRODUCTS

Guenter Hansen, Ludwigshafen; Franz Merger, Frankenthal; Gerhard Nestler, Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,839
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716674
Int. Cl.[2] C09B *46/00*; C10L *1/10*; D06P *1/02*
U.S. Cl. 8—639 3 Claims

1. A mixture of dyes of the formula



wherein the mixture contains 10–90% of a dye with n=0 and 10–90% of a dye with n=1-6, and wherein R is hydrogen or methyl.

4,210,415

SHRINKPROOFING OF FABRICS OF WOOL

Clay E. Pardo, Jr., Albany; Robert E. Foster, Concord, both of Calif., and Willie Fong, deceased, late of Richmond, Calif. (by Yukiye Fong, executrix), assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 7, 1977, Ser. No. 785,615
Int. Cl.[2] D06M *3/02, 13/00*
U.S. Cl. 8—128 A 13 Claims

1. A process for shrinkproofing and fulling a woolen fabric without significant impairment of its hand, which comprises
(a) applying a diisocyanate as a solid interfacial coating to the fabric,
(b) then, fulling the diisocyanate-treated fabric by agitating the same in water at ordinary temperature for a period of about 4 to 20 minutes, and
(c) exposing the so-treated fabric to a solution of polyamine in water to form a polyurea in situ on the fabric by chemical reaction between the diisocyanate and the polyamine at the solid-liquid interface produced by the solid diisocyanate on the fibers and the solution of the polyamine.

4,210,416

FINE-PARTICULATE ALKALI METAL ALUMINOSILICATES IN THE PROCESS OF WASHING AND CLEANING RAWHIDES AND FUR SKINS

Juergen Plapper, Hilden; Milan J. Schwuger, Haan; Heinz G. Smolka, Langenfeld; Klaus Schumann, Erkrath; Emanuel Arndt, Düsseldorf, and Emil Ruscheinsky, Leverkusen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien(Henkel KGaA), Duüseldorf, Fed. Rep. of Germany

Filed May 8, 1978, Ser. No. 903,597
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728812
Int. Cl.[2] D01C *3/00*
U.S. Cl. 8—139.1 11 Claims

1. In the process of washing and cleaning rawhides and fur skins before tanning comprising subjecting rawhides and fur skins to the action of an aqueous solution containing (1) surface-active compounds selected from the group consisting of anionic surface-active compounds, nonionic surface-active compounds and mixtures thereof, (2) emulsifiable solvents for fats and (3) electrolyte, removing said aqueous solution, rinsing and recovering washed and cleaned rawhides and fur skins, the improvement consisting essentially of employing a fine-particulate, water-insoluble alkali metal aluminosilicate, containing bound water, of the formula

$$(M_2O)_x \cdot Al_2O_3 \cdot (SiO_2)_y$$

wherein M represents an alkali metal, x is an integer from 0.7 to 1.5 and y is an integer from 0.8 to 6, said aluminosilicates having an average particle size in the range of from 0.1 to 25μ

and a calcium binding power of from 20 to 200 mg CaO/gm of anhydrous active substance measured at 22° C., as partial or total replacement of said electrolyte and optionally partial replacement of said surface-active compounds, whereby the pH of said aqueous solution is maintained between 6.5 and 8.5.

4,210,417

METHOD OF SOIL RELEASE POLYMER APPLICATION TO FABRICS IN HOME LAUNDERING

Charles P. McClain, and Jerry E. Yowell, both of La Mirada, Calif., assignors to Purex Corporation, Lakewood, Calif.

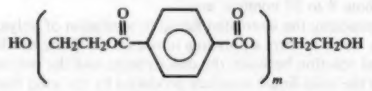
Continuation of Ser. No. 621,667, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 519,750, Oct. 31, 1974, abandoned. This application Feb. 13, 1978, Ser. No. 877,273

Int. Cl.[2] D06M *13/20*; B08B *3/00*

U.S. Cl. 8—137 **6 Claims**

1. The method of imparting soil release properties to fabrics consisting of polyester, polyamide, rayon or modacrylic fibers and blends of these fibers with other natural or synthetic fibers during a home laundering process, which consists essentially of the following steps and conditions: agitating said fabrics in an aqueous dispersion of the soil release polymer product which has an empirical formula of $(C_{39}H_{79}N_2O_{17})_{3n}$, where n is equal to about 3–10, at a polymer concentration of about 0.0002 to 0.2 weight percent of the water and subsequently drying the fabrics at a temperature customarily employed in home laundering, said soil release polymer being characterized as having been prepared by:

(a) loading into a clean and dried reactor, 209 parts of a mixture comprising 18% ethylene glycol and 82% of



where m is equal to 1–3, to obtain an oligomer mixture with a melting point between 160° and 185° C.;

(b) adding to said oligomer mixture 1298 parts of the monomethylether of polyethylene glycol of molecular weight about 550, and about 789 parts of a product prepared by ethoxylation of the mixture of straight-chain alcohols containing 60% dodecanol, 25% tetradecanol and 11% hexadecanol to form a product containing 15 links of ethylene oxide for every mole of alcohol;

(c) heating the resulting mixture to 210°±2° C., maintaining this temperature for one half hour and then cooling and maintaining the mixture at a temperature of 135°±5° C.;

(d) adding 357 parts of hexa(methoxymethyl) melamine and reducing the pressure on the mixture to 20–40 torr for one half hour;

(e) introducing gaseous nitrogen to adjust the pressure of the reactor to one atmosphere and adding 3.17 parts of anhydrous p-toluene sulfonic acid before reducing the pressure to 200 torr;

(f) reducing the pressure in the reactor after the reaction has started to between 20 and 40 torr, and heating the load in the reactor to 190°±2° C., and maintaining this temperature for four hours to terminate the reaction;

(g) cooling the load in the reactor to about 70° C. and bringing the pressure in the reactor to atmospheric pressure by adding nitrogen;

(h) adding the reacted load of step (g) to a preformed mixture of 9972 parts of water and 1.7 parts of sodium bicarbonate to form an aqueous dispersion of about 20% concentration of the said soil release polymer which has an empirical formula of $(C_{39}H_{79}N_2O_{17})_{3n}$,

said dispersion upon dilution being suitable for the treatment of textiles to improve their antistaining properties.

4,210,418

CONTAINER FOR IMMUNOCHEMICAL AND ENZYMATICAL DETERMINATIONS OR PROCEDURES

James L. Brown, House Springs; Wayne H. T. Lin, Chesterfield, and James W. Woods, Creve Coeur, all of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 718,694, Aug. 30, 1976, abandoned. This application Jan. 10, 1977, Ser. No. 758,364

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B **36 Claims**

1. An elongated, hollow container suitable for use in an immunochemical or enzymatical procedure comprising

(a) a lower reactive part composed of a polymeric material, said part being closed at one end and having on at least a portion of its inner surface a coating of an inert protein to which a biologically active substance is attached; and

(b) a separable inert upper part connected to and in communication with said lower part.

2. In an immunochemical or enzymatical method for determining the concentration of a member selected from the group consisting of an antigen and hapten in a measured amount of an aqueous sample wherein said aqueous solution is contacted with (1) an insoluble carrier to which has been attached a biologically active substance capable of reacting with said member and (2) a measured amount of tracer labelled member to form after substantial equilibration a 2-phase system containing a solid phase having a portion of the labelled member and unlabelled member bound to said biologically active substance and a liquid phase containing the balance of the unbound labelled member and unlabelled member, the two phases separated and the concentrated determined, the improvement comprising using as the insoluble carrier the container of claim 1.

4,210,419

AUTOMATED QUANTITATIVE MUSCLE BIOPSY ANALYSIS SYSTEM

Kenneth R. Castleman, Glendale, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 17, 1978, Ser. No. 878,731

Int. Cl.[2] G01N *33/16*

U.S. Cl. 23—230 B **10 Claims**

1. A method for automatic biopsy analysis of a muscle tissue specimen mounted upon a microscope slide, said tissue specimen being stained to produce a histochemical reaction of varying degrees of intensity distinguishing at least first and second types of muscle fibers, said reaction causing said first type muscle fiber to appear dark and said second type muscle fiber to appear light, said method comprising steps of

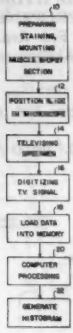
positioning said stained microscope slide in the specimen plane of a microscope,

using said microscope to obtain a magnified image of said muscle tissue specimen,

digitizing discrete points of raster scans of said image to produce digital data, each of said points comprising a pixel having a digital value representing image light intensity,

processing said pixels to determine area boundaries of fibers, using said pixels to compute size and average density of each

of said muscle fibers by counting the number of pixels in a boundary area while accumulating pixel values for each boundary in order to determine both size and average density,



classifying said muscle fibers into two or more types based upon their measured size and average density characteristics, and

generating a graphical display of fiber characteristics showing the distribution of fiber sizes for each of several fiber types.

4,210,420
DETECTION OF FIBRIN MONOMER AND COMPOSITION THEREFOR

D. Joe Baughman, Flemington; Ann Lytwyn, New Brunswick, and Kurt Myrmel, Somerville, all of N.J., assignors to Ortho Diagnostics Inc., Raritan, N.J.

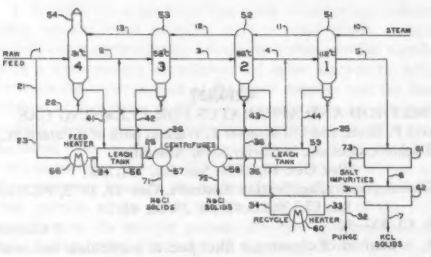
Filed Nov. 13, 1978, Ser. No. 960,421
Int. Cl.[2] G01N *33/16, 31/02, 21/22*
U.S. Cl. 23—230 B **15 Claims**

1. A fibrin monomer precipitating composition comprising water, sodium chloride, protamine sulfate, a buffering amount of a buffer having a pKa in the range of 6 to 7, said composition having a pH of 6.5±0.5 and an ionic strength of 0.15 to 5.0.

4,210,421
METHOD FOR REDUCING KCL TAILINGS LOSS FROM EVAPORATION

James B. Dahms, London, England, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1978, Ser. No. 960,197
Int. Cl.[2] B01D *1/26*
U.S. Cl. 23—303 **6 Claims**



1. In a method of concentrating with respect to potassium chloride, an aqueous solution containing potassium chloride, sodium chloride and a minor amount of salt impurities, by multiple stage evaporation at progressively higher temperatures and backward feed, wherein each evaporator stage communicates with an elutriation leg, wherein sodium chloride and potassium chloride solids co-precipitate in an evaporator stage and a slurry containing sodium chloride and potassium chloride solids are withdrawn from the elutriation leg of that stage and wherein the concentrated solution is forwarded to a step where potassium chloride is recovered by cooling, the improvement comprising:

A. leaching selectively in a separate vessel precipitated potassium chloride solids contained in the slurry withdrawn from the evaporator stage by initimately contacting and dissolving potassium chloride solids in the vessel with raw feed and/or mother liquor from the step where potassium chloride is recovered;

B. then separating the leach liquor from the sodium chloride solids and discharging the sodium chloride solids from the evaporation system; and

C. recovering precipitated potassium chloride by recycling the enriched leaching liquid to an evaporator stage.

4,210,422
REMOVAL OF SULFUR COMPOUNDS FROM COAL DURING PIPELINE TRANSPORT

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 26, 1978, Ser. No. 972,839
Int. Cl.[2] C10L *9/10;* **C10B** *57/00*
U.S. Cl. 44—15 R **5 Claims**

1. A process for removal of sulfur compounds from coal during preparation of the coal for pipeline transport and pipeline transport of the coal, comprising:

storing the coal in contact with oxygenated water for 1 to 7 days;

preparing the coal in particles sufficiently fine for transport as an aqueous slurry;

mixing the coal particles with oxygenated water and a basic chemical substance selected from the group consisting of calcium carbonates, sodium hydroxide, ammonium hydroxide, ammonia, and sodium carbonate;

transporting the coal as a slurry in a pipeline; and

separating the coal from water containing soluble sulfur compounds and from sludge-containing insoluble sulfur compounds.

4,210,423
SOLID FUEL USE IN SMALL FURNACES

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,628
Int. Cl.[2] C10L *9/00, 9/08*
U.S. Cl. 44—1 C **12 Claims**

1. A method for producing a solid fuel for small furnaces in powder form or in briquette form which has: (a) a uniform heat content of approximately 12,000–14,000 Btu per pound, (b) a sulfur content that is balanced with a scavenger for SO_2 gas to enable stack gases from said small furnaces to meet EPA emission standards for SO_2, (c) an ash that is soft, pliable, and non-sticking and that does not form "clinkers" while burning, (d) no tendency during normal storage conditions to undergo spontaneous combustion or auto-ignition, (e) adequate flow properties so that said fuel in powder form maintains fluidity and does not stick in the delivery system therefor, (f) insignificant tendency to pick up moisture during transportation or storage, (g) excellent ignition properties during cold weather starting in a cold furnace, and (h) excellent combustion properties for reducing carbon monoxide emission and soot formation and for improved heat recovery, which comprises the following steps:

A. grinding a coal or mixture of coals having a heating value of about 12,000 to 14,000 Btu to a fineness below 200 mesh;

B. drying the coal or coals with a hot gas, which is at

150°–800° F. and contains a trace amount of oxygen, to a dried moisture content of 1–15%;

C. blending the coal or coals with at least one additive selected from each group set forth below;

(1) an SO_2 scavenger for minimizing the effects of sulfur in said coal selected from the group consisting of limestone, lime, dolomite, gypsum, calcium phosphate, bauxite, and mixtures thereof,

(2) a combustion improver and ash modifier for imparting burning properties and for reducing corrosion, fouling, and ash slagging, selected from the group consisting of manganese dioxide, iron oxide, and manganese nodules.

4,210,424

COMBINATION OF ETHYLENE POLYMER, NORMAL PARAFFINIC WAX AND NITROGEN CONTAINING COMPOUND (STABILIZED, IF DESIRED, WITH ONE OR MORE COMPATIBILITY ADDITIVES) TO IMPROVE COLD FLOW PROPERTIES OF DISTILLATE FUEL OILS

Nicholas Feldman, Woodbridge; Jack Ryer, East Brunswick, and Martin F. Dooley, Edison, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 3, 1978, Ser. No. 957,568

Int. Cl.[2] C10L *1/22*

U.S. Cl. 44—62 **18 Claims**

1. A wax-containing petroleum fuel oil comprising a major proportion of a distillate oil boiling in the range of 120° to 425° C., which fuel oil has been improved in its low temperature flow properties, containing in the range of about 0.001 to 2.5 wt. %, based on the weight of the total composition, of a flow improving combination of:

(A) one part by weight of an oil-soluble ethylene backbone distillate flow improving polymer having a number average molecular weight in the range of about 500 to 50,000;

(B) 0.1 to 30 parts by weight of wax comprising principally n-paraffins having from 20 to 60 carbons; and

(C) 0.01 to 10 parts by weight of an oil-soluble nitrogen compound containing a total of about 30 to 300 carbon atoms and having at least one straight chain alkyl segment of 8 to 40 carbons, and selected from the class consisting of amine salts and/or amides of hydrocarbyl carboxylic acids or anhydrides having 1 to 4 carbonyl groups.

4,210,425

GLYCOL POLYETHER-ACRYLIC ACID-AMINE REACTION PRODUCT FOR FUEL AND MINERAL OILS

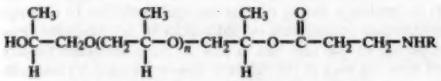
Cummings, William M., Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1977, Ser. No. 836,890

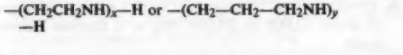
Int. Cl.[2] C10L *1/18, 1/22*

U.S. Cl. 44—72 **6 Claims**

1. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range and a glycol polyether reaction product represented by the formula:



in which n is a number from about 10 to 90 and R is a monovalent hydrocarbon radical having from about 2 to 30 carbon atoms or a radical selected from the group represented by the formulas:



in which x and y are integers from 1 to 6.

4,210,426

PROCESS FOR RECOVERING PROPENE AND PROPENE/PROPANE MIXTURES FROM THE OFF-GASES FROM THE HYDROFORMYLATION OF PROPENE

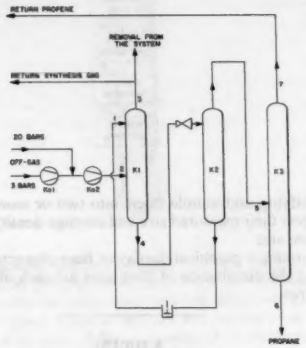
Srinivasan Sridhar, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,505

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749890

Int. Cl.[2] B01D *19/00*

U.S. Cl. 55—68 **27 Claims**



1. A process for separating off and recovering propene and propene/propane mixtures from the off-gases from the hydroformylation of propene, said off-gases including carbon monoxide, hydrogen, propene and propane, which comprises passing said off-gases from the hydroformylation of propene to an absorbent, absorbing the propene and propane from said off-gases in the absorbent, which absorbent is comprised of at least one of the liquid substances which have formed during the hydroformylation of propene, and subsequently desorbing the propene and propane from said liquid substances.

4,210,427

METHOD AND APPARATUS FOR CLEANING GAS

David P. Brett, and Christopher J. Walker, both of 3 Patern St., Highton, Geelong, Victoria, 3216, Australia

Filed Oct. 12, 1976, Ser. No. 731,798

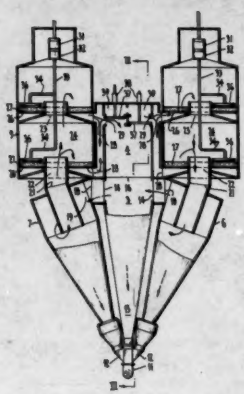
Claims priority, application Australia, Oct. 10, 1975, PC3523

Int. Cl.[2] B01D *46/30, 29/08, 46/04*

U.S. Cl. 55—96 **8 Claims**

1. A method of cleaning a filter bed of particulate material for filtering gas, wherein the gas to be filtered is passed in the form of a third gas stream through said bed in a downward direction, said method comprising passing a first gas stream upwardly through the filter bed from below in the substantial absence of said third gas stream and in a direction of flow which is counter current to the flow of said third gas stream

through the filter bed during filtering, while disturbing at least the upper surface of the filter bed with a second gas stream



issuing downwardly from a nozzle located outside of and above the filter bed.

4,210,428

GAS SCRUBBING PLANT AND BAFFLES THEREFOR

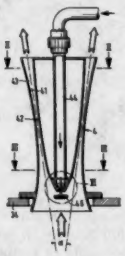
Jürg Schneider, Muttenz, and Volker Fattinger, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,555

Claims priority, application Switzerland, Nov. 29, 1977, 14584/77

Int. Cl.[2] B01D *47/10*

U.S. Cl. 55—223 **10 Claims**



1. A baffle for a gas scrubbing plant comprising a substantially conical inner member with a continuously smooth-curved outer surface located coaxially within an outer member with a continuously smooth-curved inner surface to define between the outer surface of the inner member and the inner surface of the outer member an annular passage, the inner surface of said outer member being shaped so that the cross sectional area of the annular passage from the apex of the conical member defining the inlet to the baffle decreases and then increases towards the outlet of the baffle defined by the base portion of the inner member and the top of the outer member and the annular passage diverges upwards from the inlet to the outlet at an angle in the range of 10° to 90°; said baffle further including a feed tube coaxial with said inner member and having an outlet at the apex thereof and a disc mounted in front of said outlet to deflect liquid supplied by said tube into a rotationally symmetrical jet directed up into said annular passage.

4,210,429

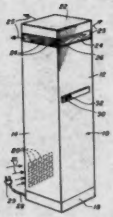
AIR PURIFIER

Jerome J. Golstein, Denver, Colo., assignor to Alpine Roomaire Systems, Inc., Denver, Colo.

Continuation of Ser. No. 784,157, Apr. 4, 1977, abandoned. This application Aug. 25, 1978, Ser. No. 936,736

Int. Cl.[2] B01D *46/10*

U.S. Cl. 55—279 **4 Claims**



1. An air purification system comprising; means defining an elongated upright enclosed housing including a plurality of walls and means forming a base supporting the walls vertically,

elongated removable means forming a part of the housing to provide access to the interior of the housing and including a removable panel having a top section and a bottom section hinged from the top section and having a plurality of openings therein; said panel being designed and dimensioned to enable complete disengagement from said housing by only raising said panel a slight vertical distance and polling the bottom thereof outwardly from said housing,

a blower disposed at the bottom end of the housing adjacent the bottom section of the removable panel for drawing air into the housing through said plurality of openings in the bottom section,

means for selectively operating said blower,

a partitioning wall disposed above the blower demarcating the bottom end of the germicidal chamber and having an opening for the blower outlet,

means defining a germicidal chamber within the housing having at least one ultraviolet lamp means disposed therein for killing viruses and bacteria flowing through the germicidal chamber,

said ultraviolet lamp extending longitudinally of said housing between top and bottom ends of the germicidal chamber with said germicidal chamber having a height at least on the order of the height of the filter,

a high efficiency filter disposed in the housing for trapping small particles down to 0.3 microns,

flange means on the interior of said housing supporting said filter above said germicidal chamber whereby substantially all viruses and bacteria that are to be destroyed are so destroyed before the air reaches the filter,

and means defining an outlet from the top of the housing for discharging the purified air,

said housing having a height substantially greater than its width with the filter, blower, and ultraviolet lamp means stacked one above the other,

said high efficiency filter dimensioned with a comparable width and depth to those of the housing so as to fit snugly within the housing entirely above the germicidal chamber and ultraviolet lamp means,

said blower causing air passage through the germicidal chamber in only one direction past the ultraviolet lamp means.

4,210,430
CYCLONE SEPARATOR ASSEMBLY

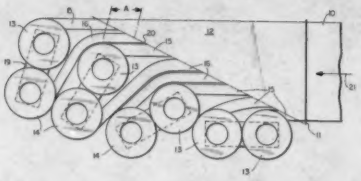
Manfred Galow, Essen, and Nikolaus Stefancik, Düsseldorf, both of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 965,710

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755257

Int. Cl.³ B01D *45/16*; B01D *5/28*

U.S. Cl. 55—344 **10 Claims**



1. A cyclone separator assembly for use in separating solids such as coal from a carrier gas conveying such solids, said assembly comprising:

conveying pipe means for conveying a carrier gas and solids conveyed thereby along a flow path extending in a rectilinear direction;

a diagonal wall extending across said conveying pipe means in a direction which is diagonally inclined with respect to said rectilinear direction;

a plurality of cyclone separators located adjacent said diagonal wall; and

branching pipe means for transferring said carrier gas and solids from said conveying pipe means to said cyclone separators, whereat said solids and carrier gas are separated, said branching pipe means comprising a plurality of branch pipes, one said branch pipe for each said cyclone separator, each said branch pipe having a first end connected to said diagonal wall and opening into said conveying pipe means and a second end connected to and opening into a respective said cyclone separator, at least an initial length portion of each said branch pipe, taken from said first end thereof, extending in a direction substantially parallel to said rectilinear direction, such that said solids and carrier gas, upon passing said diagonal wall into said branch pipes, continue to flow substantially in said rectilinear direction within said initial length portions of said branch pipes, thereby preventing premature separation of said solids within said branch pipes.

4,210,431
METHOD FOR MAKING VITREOUS CARBON COATINGS ON GLASS FIBERS

David L. Bachman, Lindley, and Francis W. Voorhees, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,988

Int. Cl.² C03C *25/02*

U.S. Cl. 65—3 C **11 Claims**

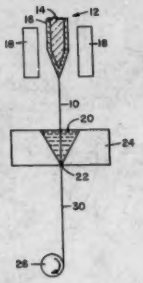
1. A method for producing a vitreous carbon coating on the surface of a highly refractory substrate which comprises the steps:

(a) providing a highly refractory substrate that is at a temperature in excess of about 1000° C.;

(b) bringing said hot substrate into contact with a thermally decomposable organic material in liquid form, the temperature of said liquid being less than about 400° C. and said organic material having a flash point in excess of 200° F.;

(c) maintaining said contact for a sufficient length of time to thermally decompose said organic material to from a vitreous carbon coating on the surface of said substrate;

(d) cooling said substrate while in contact with said organic material to a temperature below about 400° C.; and thereafter



(e) removing said substrate from contact with said organic material.

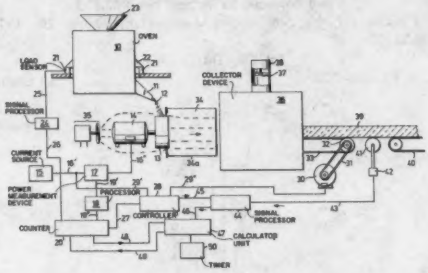
4,210,432
METHOD FOR CONTROL OF THE SURFACE WEIGHT OF A MINERAL WOOL MAT

Hans E. O. Brelen, Skövde; Arvid S. Dahlberg, Tidan, and Ulf L. Åberg, Skövde, all of Sweden, assignors to Rockwood Aktiebolaget, Skövde, Sweden

Filed Jul. 3, 1978, Ser. No. 921,882

Int. Cl.² C03B *37/00*

U.S. Cl. 65—4 R **57 Claims**



1. A method for controlling the surface weight of a mineral wool mat in a production process in which fibres of mineral wool are produced by spinning of a mineral melt and mineral wool formed from the fibres is transferred to a collection device by means of a transport medium comprising a stream of gas, said stream of gas being separated from the mineral wool in said collection device, and the mineral wool forming a mat on a collection band, said method further comprising measuring at least two variables which influence the amount of mineral wool formed per unit time and predicting, based on said measurements, the amount of mineral wool formed per unit time at a pre-future point in time, determining, by weighing, the surface weight of the formed mineral wool mat, measuring the speed of the collection band, utilizing the measured surface weight and measured collection band speed to determine the actual amount of mineral wool formed per unit at said predetermined point in time, comparing the actual amount of mineral wool formed per unit time with the predicted amount of mineral wool formed per unit so as to determine the error in the predicted amount, updating the measurements of the at least two variables, and providing a new prediction for the amount of mineral wool formed per unit time at a further point in time, based on the error in the earlier prediction and the updated measurements, so as to minimize the error in the new

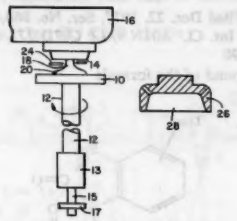
prediction, whereby the error of each new prediction is adaptively minimized, said method further comprising utilizing a control unit to control the surface weight of the formed mineral wool mat in accordance with the predicted amount of mineral wool formed per unit time.

4,210,433

FORMING GLASS ARTICLES BY USING A SPIN PLATE

Chester A. Andrysick, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 15, 1978, Ser. No. 961,009
Int. Cl.[2] C03B *19/04*
U.S. Cl. 65—66 **4 Claims**



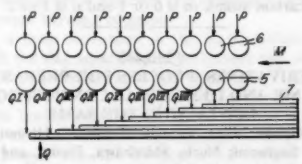
1. A method of forming a disc-shaped parison of molten glass which comprises, positioning a spin plate having a substantially flat upper surface in axial alignment with a discharge orifice, discharging molten glass from said orifice and depositing such glass upon an axial center of the upper surface of said spin plate, and rotating said spin plate about its vertical axial center and uniformly distributing such molten glass radially outwardly across said substantially flat upper surface into a disc-shaped parison of desired thickness centrally of said spin plate.

4,210,434

AUTOMATIC SYSTEM AND PROCESS OF SHAPING AND TEMPERING GLASS PIECES

Luis Galindez (Aldecoa), Llodio-Alava, Spain, assignor to Ingenieria Del Vidrio, S.A.-Ingevisa, Vitoria, Spain

Filed Oct. 26, 1978, Ser. No. 955,070
Int. Cl.[2] C03B *23/00, 27/00*
U.S. Cl. 65—104 **15 Claims**



1. A process for automatically shaping and tempering glass pieces comprising in combination:

(a) receiving heated glass pieces;

(b) inserting the heated glass pieces between an upper series and a lower series of transverse drive rollers, driving and shaping the heated glass pieces between alternate rollers of the two series;

(c) simultaneously directing currents of cooling air on the heated glass pieces at the moment such glass pieces traverse the space between the upper and lower rollers to thereby temper the glass pieces; and

(d) discharging the shaped glass pieces from between the rollers.

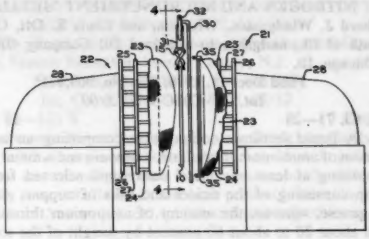
12. An automatic apparatus for simultaneously shaping and tempering heated glass pieces comprising in combination an upper series of transversely extending drive rollers, a lower series of transversely extending drive rollers in generally vertical alignment with the upper series of rollers, means in the form of elongate spring strips supporting the lower series of rollers, means for applying pressure to said upper rollers toward said lower rollers, means for varying curvature of the spring strips and thus the vertical location of the lower rollers whereby the location of the upper and lower rollers may assume a curve shaped bed to shape a glass piece, the space between the upper and the lower rollers being on the order of the thickness of a glass piece to be shaped thereon and to facilitate projection of air currents on the glass piece passing in the space between the upper and lower rollers.

4,210,435

METHOD OF MAKING ACCENT LINES IN BENT GLASS SHEETS

George R. Claassen, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1979, Ser. No. 26,107
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—106 **5 Claims**



1. A method for imparting an accent line to a glass sheet comprising:

heating a glass sheet to a softened condition, supporting the heated glass sheet in a press bending station between an opposed pair of complementary, substantially continuous shaping surfaces, supporting a rod-shaped impression member between one side of the glass sheet and one of the shaping surfaces in alignment with the desired path of the accent line on the glass sheet, closing the bending molds upon the glass sheet and the impression member, thereby pressing the impression member into the glass surface and creating distortion in the glass sheet along the line of contact between the impression member and the glass, separating the mold members, and cooling the glass sheet.

4,210,436

METHOD OF IMPRESSING AN ACCENT LINE IN BENT GLASS SHEETS WITH A HEATED TUBE

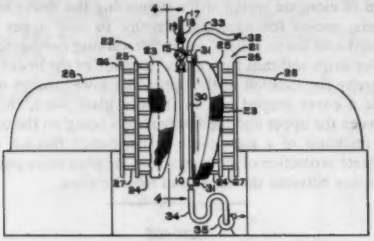
Vaughn R. Imler, Tyrone, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 2, 1979, Ser. No. 26,108
Int. Cl.[2] C03B *23/02*
U.S. Cl. 65—106 **6 Claims**

1. A method for imparting an accent line to a glass sheet comprising:

heating a glass sheet to a softened condition; supporting the heated glass sheet in a press bending station between an opposed pair of complementary, substantially continuous shaping surfaces; supporting an elongated, tubular impression member between one side of the glass sheet and one of the shaping surfaces in alignment with the desired path of the accent line on the glass sheet; heating the tubular impression member by passing hot fluid therethrough; closing the bending molds upon the glass sheet and the

impression member, thereby pressing the impression member into the glass surface and creating distortion in the



glass sheet along the line of contact between the impression member and the glass; separating the mold members; and cooling the glass sheet.

4,210,437

LIQUID FERTILIZER FOR SUPPLY OF SULFUR, NITROGEN AND MICRONUTRIENT METALS

Richard J. Windgassen, Wheaton, and Louis E. Ott, Oswego, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 14, 1978, Ser. No. 969,441
Int. Cl.[2] C05C *9/00, 3/00*
U.S. Cl. 71—28 **11 Claims**

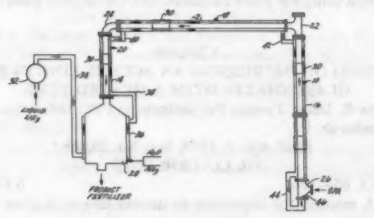
1. A liquid fertilizer composition comprising an aqueous solution of ammonium thiosulfate, ammonia and a metal source comprising at least one metal compound selected from the group consisting of the oxides and salts of copper, zinc and manganese, wherein the amount of ammonium thiosulfate is from about 20 to about 60 percent by weight of the solution, the proportion of metal source is such that the amount of metal provided by said metal source is from about 1 to about 15 percent by weight of the solution, and the amount of ammonia is such that the ratio of moles of ammonia to gram-atoms of said metal is from about 2 to about 30.

4,210,438

AMMONIATED PHOSPHORIC ACID FERTILIZER PRODUCTION

Philip W. Casperson, Houston, Tex., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Sep. 7, 1977, Ser. No. 831,344
Int. Cl.[2] C05B *7/00*
U.S. Cl. 71—34 **17 Claims**



1. In a process for the production of fertilizers by reaction of superphosphoric acid with ammonia to yield a high temperature reactant melt in a tubular reaction zone providing an interior metal surface in contact with said reactant melt, the constituents of which are potentially reactive to form scale by temperature determined reactions, the method of preventing scale formation. The improvement comprising passing cold liquid ammonia through an annular passageway surrounding said tubular reaction zone in an amount sufficient to remove at least about 45,000 BTU/sq. ft. of internal metal surface/hr by indirect heat exchange with accompanying total vaporization of ammonia, whereby the interior metal surface of the tubular reaction zone will be maintained at a temperature below a temperature at which scale formation will initiate and passing the vaporized ammonia into said tubular reaction zone.

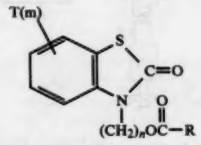
4,210,439

N-SUBSTITUTED OXOBENZOTHIAZOLINES AND THEIR USE AS PLANT GROWTH REGULATORS

Frederic G. Bollinger, Creve Coeur, and John J. D'Amico, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

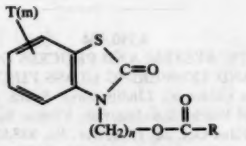
Filed Dec. 22, 1977, Ser. No. 863,498
Int. Cl.[2] A01N *9/12*; C07D *277/68*
U.S. Cl. 71—90 **24 Claims**

1. A compound of the formula



wherein R is alkyl having from 1–5 carbon atoms, T is Chloro, NO_2, alkyl having from 1–5 carbon atoms, or alkoxy having from 1 to 5 carbon atoms, m is 0 or 1, and n is 1 or 2.

9. A method of regulating the natural growth and development of leguminous crop plants which comprises applying to the plant locus an effective plant regulating, non-lethal, amount of a compound of the formula



wherein R is alkyl having from 1–5 carbon atoms, T is chloro, NO_2, alkyl having from 1–5 carbon atoms or alkoxy having from 1–5 carbon atoms, m is 0 or 1 and n is 1 or 2.

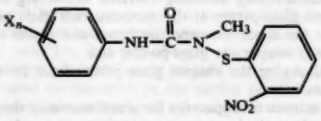
4,210,440

UREA DERIVATIVES, PROCESS FOR PREPARING THE SAME AND HERBICIDAL COMPOSITION CONTAINING THE SAME

Masanori Okada, Niiza; Yasushi Murakami; Hiromi Tomioka, both of Suginami; Norio Shirakawa, Iruma, and Kunihiko Togashi, Yachiyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1978, Ser. No. 881,891
Claims priority, application Japan, Mar. 14, 1977, 52-27077
Int. Cl.[2] A01N *9/12*; C07C *69/02*
U.S. Cl. 71—98 **21 Claims**

1. An N-(substituted phenyl)-N'-methyl-N'-(2-nitrophenyl) urea represented by the formula



wherein X is halogen, lower alkyl, lower alkoxy, nitro or trifluoromethyl; n is an integer of from 1 to 3, provided that if n is 2 or 3, X may represent any one of the members defined above.

4,210,441

METHOD FOR THE CONTINUOUS OR DISCONTINUOUS TREATMENT OF MOLTEN SLAG, PARTICULARLY WITH CONTENTS OF HEAVY METAL OXIDES, FOR THE RECOVERY OF PORTIONS CONTAINED THEREIN OF VALUABLE METALS OR THEIR COMBINATIONS, RESPECTIVELY

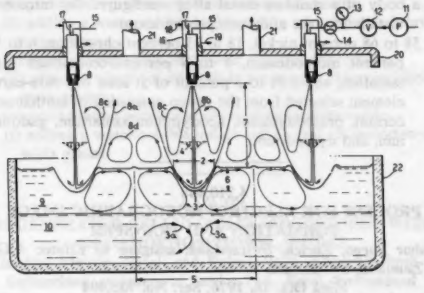
Wolfgang Wuth, Berlin, Fed. Rep. of Germany

Filed Oct. 3, 1977, Ser. No. 838,723

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645585

Int. Cl.[2] C22B *25/00*

U.S. Cl. 75—24 **6 Claims**



1. A method for treatment of molten slag having heavy metal oxides for the recovery of valuable metals contained therein through precipitation during the slag melting and volatizing out of the slag melting bath, said slag floating on and completely covering a molten material bath, said method comprising the steps:

blowing reaction gases through a nozzle in a vertical jet with substantial force down onto the surface of the slag melt to form a depression in the surface of said slag while still maintaining a continuous cover over said molten material bath, thereby causing a reaction contact between the gas of the jet and the slag and generating a torous movement of the slag material adjacent said depression, while causing upward blowing of gases;

inducing a torus movement in the liquid molten material beneath the slag adjacent said jet-formed slag depression by said torus movement of said slag; and

adjusting the force of the vertical jet acting on the slag so that the horizontal diameter of the induced flow in the molten material beneath the slag is in the range of 2 to 5 times greater than the horizontal diameter of said slag depression and the depth of the induced flow in the molten material is on the order of one-half the diameter of the jet-formed slag depression.

4,210,442

ARGON IN THE BASIC OXYGEN PROCESS TO CONTROL SLOPPING

Jennings B. Lewis, III, Putnam Valley, N.Y., and Peter P. Kelly, Grosse Ile, Mich., assignors to Union Carbide Corporation, New York, N.Y.

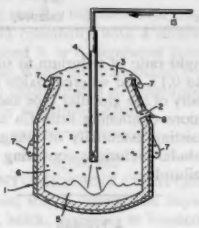
Filed Feb. 7, 1979, Ser. No. 10,316

Int. Cl.[2] C21C *5/32*

U.S. Cl. 75—60 **6 Claims**

1. In a process for refining molten steel contained in a vessel by blowing oxygen into the melt from above the melt surface whereby an emulsion is formed above said surface, the improvement comprising:

preventing slopping of said emulsion from said vessel by:



(a) blowing an inert gas into the vessel when slopping is imminent or has begun, at a flow rate sufficient to stop slopping, while continuing to blow with oxygen, and

(b) ceasing the blow of inert gas into the vessel when slopping has stopped or is no longer imminent.

4,210,443

IRON GROUP TRANSITION METAL-REFRACTORY METAL-BORON GLASSY ALLOYS

Ranjan Ray, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 27, 1978, Ser. No. 881,213

Int. Cl.[2] C22C *19/00, 38/06, 38/32*

U.S. Cl. 75—123 K **7 Claims**

1. A substantially totally glassy alloy consisting essentially of about 5 to 10 atom percent boron, about 5 to 15 atom percent of at least one of molybdenum and tungsten and the balance essentially iron, cobalt and nickel, each present in an amount of at least about 5 atom percent, plus incidental impurities.

4,210,444

MAGNESIUM-FREE, FINE-GRAINED STRUCTURAL STEEL WITH IMPROVED MACHINABILITY AND WORKABILITY

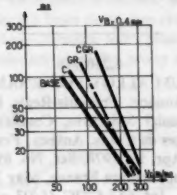
Jean Bellot, Pompey, France, assignor to Societe Nouvelle des Acieries de Pompey, Neuilly-sur-Seine, France

Filed May 31, 1978, Ser. No. 911,113

Claims priority, application France, Jun. 24, 1977, 77 19484

Int. Cl.[2] C22C *38/60*

U.S. Cl. 75—124 **5 Claims**



1. A fine-grained structural steel composition having improved machinability and good mechanical properties, said steel consisting essentially of the following elements in the following percentage ranges, by weight:

C	0.05–0.7
Mn	0.3–2
S	0.02–0.10
Te	0.0014–0.013
Ca	0.0002–0.0018
Al	0.01–0.05
Si	0.15–2
Cr	0–5

-continued

Ni	0–5
Mo	0–2
V	0–1
Fe	balance,

wherein the weight ratio of tellurium to sulphur is in a range between 0.07 and 0.13, and wherein oxide and sulphide inclusions are essentially of the globular type and comprise calcium aluminate inclusions containing little Ca and coated with an outer layer consisting essentially of manganese and calcium sulphide and globular inclusions consisting essentially of manganese sulpho-telluride.

4,210,445

NIOBIUM-CONTAINING WELDABLE STRUCTURAL STEEL HAVING GOOD WELDABILITY

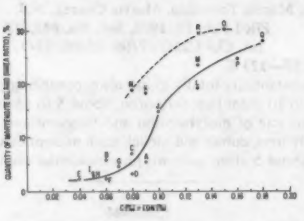
Yutaka Kasamatsu, Mikagenakamachi; Mutsuo Hiromatsu, Akashi; Syuzi Takashima, Kakogawa; Takasi Hosoya, Akashi, and Takamichi Hamanaka, Kakogawa, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Mar. 8, 1978, Ser. No. 884,384

Claims priority, application Japan, Oct. 18, 1977, 52-125249

Int. Cl.[2] C22C *38/04, 38/12;* C21D *7/14*

U.S. Cl. 75—124 **2 Claims**



1. A niobium-containing weldable structural steel having good weldability which consists of 0.005–0.04% of C, 0.01–0.50% of Si, 1.20–2.50% of Mn, 0.01–0.07% of Nb, 0.005–0.030% of Ti, 0.005–0.06% of Al and the balance of iron and inevitable impurities whereby (C(%)+10 N(%)) is not greater than 0.10% and Ti(%)/(C(%)+10 N(%)) is from 0.05 to 0.60 whereby the amount of the martensite islands in the weld heat affected zone when said steel is subjected to a welding process is not greater than 15% in terms of the area fraction.

4,210,446

ALUMINUM ALLOY FOR ENAMELLING

Michel Deleuze, Annecy; Francois-Regis Boutin, Virieu sur Bourbre, and Daniel Marchive, Coublevie, all of France, assignors to Forges de Crans, Annecy, France

Filed Apr. 19, 1978, Ser. No. 897,720

Claims priority, application France, May 24, 1977, 77 16631

Int. Cl.[2] C22C *21/02*

U.S. Cl. 75—148 **4 Claims**

1. Aluminum-based alloy intended more particularly for the manufacture of enamelled articles, consisting essentially of the following composition (by weight):

Si: 1 to 1.5%

at least one of the elements of the group Fe-Ni-Co in a total quantity between 0.3 and 2%

at least one of the elements of the group Mo-Nb-Ta in a total quantity between 0.05 and 1%

Cr: 0.05 to 0.2%

Cu: <0.2%

Mg: <0.01%

the remainder being aluminum with the standard impurities, the silicon operates in the alloy to enhance adhesion of the enamel while the elements from the groups Fe-Ni-Co and Mo-Nb-Ta favorably influence the adhesion of the enamel.

4,210,447

DENTAL RESTORATIONS USING CASTINGS OF NON-PRECIOUS METALS

Min H. Tsai, Van Nuys, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 854,407, Nov. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 743,192, Nov. 19, 1976, which is a continuation of Ser. No. 643,621, Dec. 23, 1975, which is a continuation of Ser. No. 465,837, May 1, 1974, abandoned. This application Nov. 20, 1978, Ser. No. 962,118

Int. Cl.[2] C22C *19/05*

U.S. Cl. 75—171 **3 Claims**

1. A non-precious metal base for a dental restoration, comprising:

a body of a stainless metal alloy configured for intra-oral installation, the alloy comprising about:

58 to 68 percent nickel, 18 to 23 percent chromium, 6 to 10 percent molybdenum, 1 to 4 percent columbium plus tantalum, and 0.01 to 5 percent of at least one rare-earth element selected from the group consisting of lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, and dysprosium.

4,210,448

PROCESS FOR ELECTROPHOTOGRAPHIC IMAGE FORMATION AND TRANSFER

Gabor Forgo, Zurich, Switzerland, assignor to Elfotec A.G., Zumikon, Switzerland

Filed Oct. 18, 1976, Ser. No. 733,494

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1975, 2547118

Int. Cl.[2] G03G *13/16, 9/14*

U.S. Cl. 430—126 **10 Claims**

1. Process for electrophotographic image production by the toner transfer process by use of a corona, comprising applying in the absence of applied potential field a magnetic one-component toner having a resistivity of at least 10^{13} ohm-cms and comprising particles which have a core of magnetizable or magnetic material and a carbon content of the surface of the toner particles of at most 0.7 percent by weight which has not been charged by applied potential field or by frictional electricity for production of the image, and transferring the produced toner image to a surface by applying a corona thereto.

4,210,449

RADIATION SENSITIVE COMPOSITION COMPRISING COPOLYMER OF GLYCIDYL METHACRYLATE AND ALLYL GLYCIDYL ETHER AND DIAZONIUM SALT OF COMPLEX HALOGENIDE

Sheldon I. Schlesinger, E. Windsor Township, Mercer County, and Veronica Cochran, Cranbury, both of N.J., assignors to American Can Company, Greenwich, Conn.

Continuation-in-part of Ser. No. 297,829, Oct. 16, 1972, abandoned. This application Feb. 4, 1975, Ser. No. 547,080

Int. Cl.[2] G03C *1/70, 1/54, 1/86, 1/94*

U.S. Cl. 430—183 **14 Claims**

1. A composition of matter comprising, in admixture, a copolymer of glycidyl methacrylate and allyl glycidyl ether, derived from about 4 to about 5 moles of glycidyl methacrylate per mole of allyl glycidyl ether, having an inherent viscosity of at least about 0.25 and an epoxide equivalent of at least about 0.65 per 100 grams of polymer and, as a latent curing catalyst, an aromatic diazonium salt of a complex halogenide which decomposes upon exposure to electromagnetic or electron beam irradiation to release a Lewis Acid effective to initiate polymerization, said catalyst being present in an amount suffi-

cient to effect polymerization of said copolymer and being selected from compounds having the general formula $(ArN_2)_m(MX_{n+m})$ wherein Ar is an aryl or substituted aryl group, X is halogen, M is selected from the group consisting of arsenic, antimony, bismuth, iron, tin, phosphorus and boron, n is the oxidation state of M, and m is the number of diazonium groups in the diazonium salt as determined by the net charge on the complex anion $(MX_{n+m})^{-m}$.

4,210,450

METHOD FOR FORMING PHOTOSENSITIVE SILVER HALIDE EMULSION

Leo D. Corben, Swampscott, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 20, 1978, Ser. No. 962,337

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—567 **10 Claims**

1. The method for forming photosensitive silver halide grains which comprises the following steps, in sequence:

(a) precipitating silver chloroiodobromide grains;

(b) adding a water-soluble iodide salt to said chloroiodobromide grains;

(c) precipitating additional silver chloroiodobromide;

(d) adding a water-soluble iodide salt to said chloroiodobromide grains;

(e) precipitating additional silver chloroiodobromide;

(f) add g a water-soluble iodide salt to said chloroiodobromide grains.

4,210,451

REGENERATED CELLULOSE FLAMEPROOFED WITH ORGANOPHOSPHORYLAMIDES

Claudine Mauric, Basel, and Rainer Wolf, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

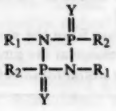
Continuation of Ser. No. 745,414, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 520,303, Nov. 4, 1974, abandoned. This application Oct. 16, 1978, Ser. No. 951,393

Claims priority, application Switzerland, Nov. 9, 1973, 15814/73; Feb. 12, 1974, 1934/74; Jun. 10, 1974, 7882/74; Jun. 25, 1974, 8681/74

Int. Cl.[2] C09K *3/28*

U.S. Cl. 106—18.17 **20 Claims**

1. Flameproofed regenerated cellulose containing as a flameproofing agent a compound of formula,



in which

both Y's are oxygen or sulphur,

both R_1's are unsubstituted phenyl or phenyl substituted with up to 3 substituents selected from 1 to 3 chlorine atoms, a bromine atom in the para-position, 1 to 3 C_{1-4} alkyl radicals and 1 to 3 C_{1-4} alkoxy radicals, the aggregate of the carbon atoms in the alkyl and/or alkoxy radicals being a maximum of 4, and, when Y is sulphur, both R_1's may also be methyl, and

both R_2's are a radical of formula

wherein R_3 is hydrogen and

R_4 is unsubstituted phenyl or phenyl substituted with up to 3 substituents selected from 1 to 3 chlorine atoms, a bromine atom in the para-position, 1 to 3 C_{1-4} alkyl radicals and 1 to 3 C_{1-4} alkoxy radicals, the aggregate of the carbon atoms in the alkyl and/or alkoxy radicals being a maximum of 4, or, when Y is oxygen, R_4 can be cyclohexyl, or when

Y is oxygen R_3 and R_4, together with the common nitrogen atom and optionally with a further hetero atom, form a saturated 5- or 6-membered heterocyclic ring,

with the proviso that when simultaneously Y is oxygen, R_3 is hydrogen and R_1 is unsubstituted or substituted phenyl, R_4 is only unsubstituted or substituted phenyl.

4,210,452

NOVEL INTUMESCENT COMPOSITION

Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Veesicol Chemical Corporation, Chicago, Ill.

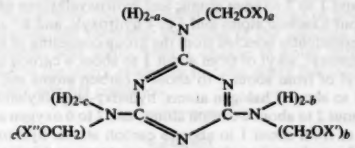
Filed Dec. 6, 1978, Ser. No. 966,931

Int. Cl.[2] C09D *5/18*

U.S. Cl. 106—18.18 **11 Claims**

1. An intumescent composition comprising a cyclic nitrogen compound, a phosphorus polyol, a phosphorus acid, and water, wherein:

(a) said nitrogen compound is



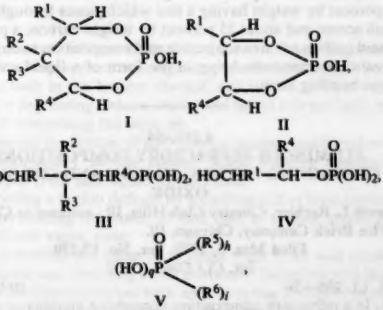
wherein a, b, and c are integers selected from the group consisting of 1 and 2, a plus b plus c equal about 3 to 6, and X, X', and X'' are independently selected from the group consisting of hydrogen and $-CH_3$, provided that at least one of said X, X', and X'' groups is $-CH_3$;

(b) said phosphorus polyol is the reaction product of the reaction of:

1. a member selected from the group consisting of phosphorous acid, phosphoric acid, phosphonic acids, pyrophosphoric acid, diphosphoric acid, diphosphinic acids, monoesters of phosphoric acid, monoesters of polyphosphoric acid, monoesters of diphosphori acid, diesters of diphosphoric acid, diesters of diphosphinic acid diesters of diphosphonic acids, diesters of pyrophosphoric acid, and mixtures thereof; and

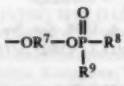
2. an oxide selected from the group consisting of alkylene oxides, alkylene dioxides, and epihalohydrin.

(c) said acid is selected from the group consisting of



and mixtures thereof, wherein R^1, R^2, R^3, and R^4 are independently selected from the group consisting of hydrogen, alkyl of

from about 1 to about 3 carbon atoms, haloalkyl of from about 1 to about 3 carbon atoms, and hydroxyalkyl of from 1 to about 3 carbon atoms, provided that the total number of carbon atoms in the R^1, R^2, R^3, and R^4 groups does not exceed about 5; wherein q is an integer of from 1 to 2, h and i are integers independently selected from the group consisting of 0, 1, and 2, and q plus h plus i equals 3; and wherein R^5 and R^6 are independently selected from the group consisting of alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from 1 to about 3 halogen atoms, hydroxy-polyalkyleneoxy containing 2 to 6 carbon atoms and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, haloalkoxy of from about 2 to about 6 carbon atoms and from about 1 to about 3 halogen atoms,



wherein R^7 is selected from the group consisting of alkylene of from about 2 to about 6 carbon atoms, haloalkylene of from about 3 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, polyalkyleneoxy containing 2 to 6 carbon atoms and 1 to 5 oxygen atoms, and hydroxyalkylene of from 3 to about 6 carbon atoms and 1 to 4 hydroxyls, and R^8 and R^9 are independently selected from the group consisting of hydrogen, hydroxyl, alkyl of from about 1 to about 6 carbon atoms, haloalkyl of from about 1 to about 6 carbon atoms and from about 1 to about 3 halogen atoms, hydroxy-polyalkylenoxy of from about 2 to about 6 carbon atoms, and 2 to 6 oxygen atoms, alkoxy of from about 1 to about 6 carbon atoms, hydroxyalkoxy of from about 2 to about 6 carbon atoms, and haloalkoxy of from about 2 to about 6 carbon atoms and 1 to about 3 halogen atoms, provided that the total number of carbon atoms in the R^5 and R^6 groups does not exceed about 8.

4,210,453

CARBON BONDED REFRACTORY BRICK COMPOSITION

Donald J. Bowers, Jackson, Ohio, assignor to Davis Refractories, Inc., Oak Hill, Ohio

Filed Nov. 8, 1978, Ser. No. 958,828
Int. Cl.[2] C04B *35/52*
U.S. Cl. 106—56 **4 Claims**

1. A moldable refractory composition for making a compact shaped body which includes about 75 percent by weight periclase with about 34 percent of said periclase having a size which passes through a 4 mesh Tyler Standard Screen and is retained on a 10 mesh screen, about 28 percent by weight having a size which passes through a 10 mesh screen and is retained on a 35 mesh screen, about 14 percent by weight having a size which passes through a 35 mesh screen and about 34 percent by weight having a size which passes through a 150 mesh screen and about 25 percent by weight carbon, a portion of said carbon prior to subjecting said composition to curing at elevated temperatures being in the form of a liquid carbonaceous bonding resin.

4,210,454

ALUMINOUS REFRACTORY COMPOSITIONS CONTAINING CARBON, SILICON AND CHROME OXIDE

Harold L. Rechter, Country Club Hills, Ill., assignor to Chicago Fire Brick Company, Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,270
Int. Cl.[2] C04B *35/52*
U.S. Cl. 106—56 **10 Claims**

1. In a refractory composition comprising alumina or aluminum silicate refractory material, carbon and powdered silicon, the improvement of having chromic oxide and carbon present in the composition in amount sufficient to give greater resistance to slag over that of aluminous composition in which chromic oxide and carbon are absent.

4,210,455

RETARDED AQUEOUS HYDRAULIC CEMENT SLURRY

Arthur S. Metcalf, Tulsa, and Louis H. Eilers, Inola, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1978, Ser. No. 955,681
Int. Cl.[2] C04B *7/35*
U.S. Cl. 106—90 **17 Claims**

1. A hydraulic cement slurry comprising a hydraulic cement, sufficient water to form a pumpable slurry which will cure to a dimensionally stable solid, and an effective amount of a retarder selected from the group consisting of

alkaline earth metal salts of mono- and di-carboxylic acid derivatives of simple sugars,

said slurry being substantially free of lignin derivatives.

4,210,456

METHOD FOR PRODUCING A STORABLE MORTAR

Richard L. Miller, Mountain Green, Utah, assignor to Ultra Mortar, Inc., Ogden, Utah

Filed Apr. 21, 1978, Ser. No. 898,877
Int. Cl.[2] C04B *7/352*
U.S. Cl. 106—92 **7 Claims**

1. A method for controlling the initiation of hydraulic hydration of hydraulic mortar mixtures formed of cementitious material, aggregate and water to allow prolongation of the setting times of such mixtures while retaining workability prior to setting and retaining normal strength characteristics subsequent to setting and to cause the setting rate on initiation of hydraulic hydration to be at least as rapid as that of hydraulic mortar mixtures which have not undergone suspension of hydraulic hydration, comprising the steps of:

mixing with the hydraulic mortar mixture an effective amount of an additive comprised of saccharide polymers, each said saccharide polymer being composed of glucose units and having a size of from 3 glucose units to on the order of 25 glucose units;

storing the resulting admixture of additive and hydraulic mortar mixture under sealed conditions for a period of time exceeding the normal setting time of the hydraulic mortar mixture to minimize moisture evaporation from the admixture; and

removing the admixture from the sealed conditions at ambient atmospheric pressure at the time of intended use of the admixture to allow initiation of setting to proceed.

4,210,457

PORTLAND CEMENT-FLY ASH-AGGREGATE CONCRETES

Vance H. Dodson, Walpole, and Lawrence R. Roberts, Acton, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 12, 1978, Ser. No. 950,918
Int. Cl.[2] C04B *7/02*
U.S. Cl. 106—97 **32 Claims**

1. A dry, hydratable concrete composition comprising a mixture of Portland cement and fly ash, and, in addition, aggregate in particulate form, said Portland cement and fly ash being present in a weight ratio of from 1 part cement to at least 1 part ash, said aggregate being present in an amount of at least 50 percent by volume of the total volume of the composition, said fly ash upon analysis having a total calcium oxide content greater than about 10 percent by weight, the total additive amount of SiO_2, Al_2O_3 and Fe_2O_3 present in said fly ash being less than about 80 percent by weight, said fly ash furthe not having been first treated to promote activity prior to incorporation in said concrete composition.

4,210,458
PLASTICIZED SULFUR WITH IMPROVED THIXOTROPY

Militun Simic, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 670,036, Mar. 24, 1976, abandoned. This application Nov. 30, 1978, Ser. No. 965,126
Int. Cl.² C09K 3/00
U.S. Cl. 106—287.23 **12 Claims**

1. A method of preparing a plasticized sulfur composition from a molten mixture of solidified preformed plasticized sulfur concentrate and sulfur, which comprises mixing the preformed sulfur concentrate in the molten state with molten sulfur in the presence of 0.01 to 5 weight percent of a C_2–C_{25} saturated polyhydric alcohol thereby to increase the viscosity of the molten plasticized sulfur concentrate-sulfur mixture by at least 500 centipoises at an RPM of 6 using a No. 3 spindle in a Brookfield Viscometer test at 145° C., the plasticized sulfur concentrate in the preformed state comprising at least 10 weight percent sulfur, and the molten plasticized sulfur concentrate-sulfur mixture comprising at least 50 weight percent sulfur and at least 10 weight percent more sulfur than the plasticized sulfur concentrate.

4,210,459
POLYMER COMPOSITE ARTICLES CONTAINING POLYSULFIDE SILICON COUPLING AGENTS

Thomas C. Williams, Ridgefield, Conn., and George E. Totten, West Haverstraw, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 810,853, Jun. 28, 1977, Pat. No. 4,151,157. This application Jan. 8, 1979, Ser. No. 1,856
Int. Cl.² C09C 3/12
U.S. Cl. 106—308 N **15 Claims**

1. An inorganic substrate treated with a polysulfide silicon coupling agent selected from the class consisting of (i) polysulfide silanes having the formula

$$X_{3-b}-\underset{\displaystyle R'_b}{\overset{|}{Si}}-(R)_n(Q)_tCH(S)_xCH(Q)_t(R)_n-\underset{\displaystyle R'_b}{\overset{|}{Si}}-X_{3-b} \qquad (I)$$

$$\qquad\qquad\qquad\qquad\qquad\qquad\quad \underset{\displaystyle CH_2Z}{|}\qquad \underset{\displaystyle CH_2Z}{|}$$

wherein R′ is hydrogen or a monovalent radical selected from the class consisting of hydrocarbon radicals and substituted hydrocarbon radicals;
wherein X is a hydrolyzable radical selected from the class consisting of alkoxy, aryloxy, acyloxy, secondary amino and aminooxy radicals;
wherein R is a divalent bridging group selected from the class consisting of hydrocarbon radicals, groups of the formula —R″OR″— and groups of the formula —R″SR″— wherein R″ is a divalent hydrocarbon radical.
wherein Q is an oxygen atom or a sulfur atom;
wherein Z is a monovalent organic amino radical the nitrogen atom of which is directly bonded to the carbon atom of the (CH_2) group of the above formula;
wherein n has a value of 0 or 1 and t has a value of 0 or 1, with the proviso that when n is 0, then t is 0; and
wherein b has a value of 0 to 2, and x has a value of 2 to 4;
(ii) polysulfide siloxane homopolymers consisting essentially of siloxy units having the formula

$$O_{\frac{3-b}{2}}-\underset{\displaystyle R'_b}{\overset{|}{Si}}-(R)_n(Q)_tCH-(S)_x-CH(Q)_t(R)_n-\underset{\displaystyle R'_b}{\overset{|}{Si}}-O_{\frac{3-b}{2}} \qquad (II)$$

$$\qquad\qquad\qquad\qquad\qquad\quad \underset{\displaystyle CH_2Z}{|}\qquad\qquad \underset{\displaystyle CH_2Z}{|}$$

wherein R′, R, Q, Z, n, t, b and x are the same as defined above; and (iii) polysulfide siloxane copolymers consisting essentially of at least one siloxy unit represented by formula (II) above and at least one siloxy unit represented by the formula

$$R'_cSiO_{\frac{4-c}{2}} \qquad (III)$$

wherein R′ is the same as defined in formula (II) above, and wherein c has a value of from 0 to 3 inclusive.

4,210,460
SPILL CONTROL COMPOSITION AND USE THEREOF

James W. Seidenberger, Bethlehem, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.

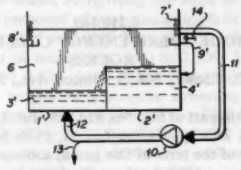
Filed Oct. 22, 1975, Ser. No. 624,591
Int. Cl.² B08B 3/08
U.S. Cl. 134—7 **2 Claims**

1. A method for the control and cleanup of spilled hydrofluoric acid comprising first applying to the spilled hydrofluoric acid an aqueous solution of about 25 to 29% by weight of calcium acetate and about 71 to 75% by weight of water and thereafter applying to said spilled hydrofluoric acid a powdered composition of about 99.90 to 99.99% by weight powdered magnesium oxide and about 0.01 to 0.10% by weight of a solid pH indicator changing color in the range pH 6.0–8.0, which powdered composition has first been activated by the addition of at least 350 ml of water per 110 grams of powdered composition, and thereafter disposing of the resulting treated hydrofluoric acid slurry after a change in color of the pH indicator in the slurry evidences that the slurry has reached an essentially safe pH condition.

4,210,461
METHOD FOR RECOVERING HEAT IN A VAPOR DEGREASING APPARATUS

Hans G. E. Möree, Surte, and Helmut Grunewald, Gothenburg, both of Sweden, assignors to Elecktrokemiska AB, Fack, Sweden

Continuation of Ser. No. 691,075, Jun. 14, 1976, abandoned. This application Jun. 29, 1978, Ser. No. 920,281
Claims priority, application Sweden, Jun. 2, 1975, 75062513; Dec. 15, 1975, 75141093
Int. Cl.² B08B 5/00
U.S. Cl. 134—11 **3 Claims**



1. A method of heat control in a solvent vapor degreasing apparatus, said apparatus comprising a tank containing a liquid solvent bath in the bottom thereof, and with a solvent vapor zone for degreasing objects above said liquid solvent bath, said method comprising the steps of:
a. heating the bottom of said tank for heating said liquid to be continuously at the boiling point, thereby generating vapor from said liquid solvent bath;
b. cooling a region defined by a cooling coil at least partially surrounding the inside of said tank at a level above said solvent vapor zone;
c. recovering the vapor in a liquid form from said cooling region and returning a first portion of the recovered liquid to said liquid solvent bath and diverting a second portion of the recovered liquid into said cooling coil of a heat pump means;
d. supplying heat absorbed by said cooling coil in said cool-

ing region from said solvent vapor to a circulating heat-carrying medium of a system including said heat pump means, in which the medium is vaporized and thereafter is compressed and discharging the vaporized and compressed medium at high temperature and pressure directly into the liquid solvent bath, said heat-carrying medium including said second portion of said recovered liquid solvent; and

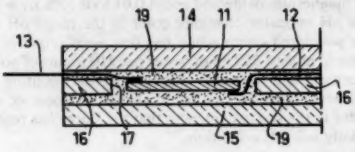
e. supplying extra energy from outside the system including the heat pump means for operation of said system and cooling away excess heat outside the degreasing apparatus for balancing said system.

4,210,462

GENERATOR PANEL HAVING SOLAR CELLS INCORPORATED IN A LAMINATED ASSEMBLY

Michel Tourneux, Velizy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1978, Ser. No. 903,052
Claims priority, application France, Jun. 24, 1977, 77 19435
Int. Cl.[2] H01L *31/04*
U.S. Cl. 136—89 EP **6 Claims**



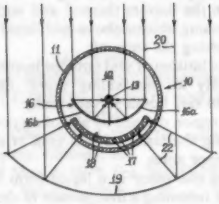
1. A photovoltaic generator panel which comprises a plurality of lamellar elements, the two external lamellar elements being formed of a vitreous material, at least one of said vitreous material lamellar elements being transparent; an inner lamellar element provided with a plurality of openings, said inner lamellar element being formed of a synthetic resin having a softening temperature above 70° C.; a solar cell positioned in each such opening, the thickness of the inner lamellar element being slightly greater than that of the solar cells; and a transparent adhesive bonding said lamellar elements and said solar cells together, said adhesive being a synthetic resin formed from a monomer polymerized at a temperature below 70° C.

4,210,463

MULTIMODE SOLAR ENERGY COLLECTOR AND PROCESS

William J. D. Escher, 506 S. Clinton Ave., St. Johns, Mich. 48879

Continuation-in-part of Ser. No. 814,289, Jul. 11, 1977, Pat. No. 4,136,673. This application Jan. 11, 1979, Ser. No. 2,663
The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.
Int. Cl.[2] H01L *31/04*; F24J *3/02*
U.S. Cl. 136—89 PC **29 Claims**



1. A multimode solar energy collector comprising: a transparent tubular body portion having end closures sealing each end of said body portion providing a fluid-tight cavity within the tube, a concentrator-reflector within the tube, a focal-line solar energy absorber in the focus of said concentrator-reflector, means for removal of absorbed energy from said focal-line solar energy absorber to the exterior of said tube, a diffuse solar energy absorber within the tube adapted to be in the path of reflected or diffuse solar radiation, a low temperature fluid conduit in thermal exchange relation with said diffuse solar energy absorber, heat exchanger fluid in said conduit and means for introducing and withdrawing the heat exchange fluid from said collector, said concentrator-reflector adapted to be in the path of direct solar radiation and focusing said direct radiation to said focal-line absorber and said diffuse absorber adapted to be in the path of reflected or diffuse solar radiation.

4. The multimode solar energy collector of claim 1 wherein said focal-line energy absorber is coated with a photovoltaic material or fitted with photovoltaic cells directly converting the solar energy into electrical energy.

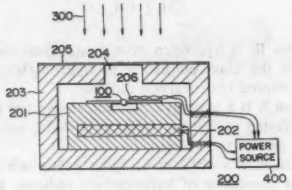
5. The multimode solar energy collector of claim 1 wherein said concentrator-reflector is in movable relation to the tube.

4,210,464

METHOD OF SIMULTANEOUSLY CONTROLLING THE LIFETIMES AND LEAKAGE CURRENTS IN SEMICONDUCTOR DEVICES BY HOT ELECTRON IRRADIATION THROUGH PASSIVATING GLASS LAYERS

Tomoyuki Tanaka; Masahiro Okamura; Toshikatsu Shirasawa, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 873,774
Claims priority, application Japan, Feb. 2, 1977, 52-9682
Int. Cl.[2] H01L *21/263*; C03C *3/04*
U.S. Cl. 148—1.5 **7 Claims**



1. A method of controlling the lifetime of minority carriers in a semiconductor device without increasing the reverse leakage current in said device, wherein said semiconductor device has a semiconductor substrate including a pn junction substantially responsible for the blocking voltage of the device, said method comprising the steps of:

coating an exposed end of said pn junction with a glass insulator material substantially free of alkali metal ions to provide a passivating glass layer thereon;

sintering said glass material by heating said layer; and

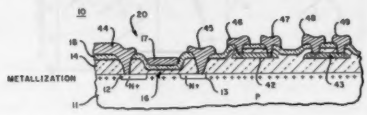
reducing said lifetime by irradiating said pn junction having said passivating glass layer with radiation capable of causing lattice defects in said semiconductor device at a temperature above 300° C. in a temperature range wherein a reverse leakage current in said substrate is made smaller than that current obtained when said pn junction is subjected to said irradiation at room temperature and wherein the electrical characteristics of said device are not deteriorated.

4,210,465

CISFET PROCESSING INCLUDING SIMULTANEOUS IMPLANTATION OF SPACED POLYCRYSTALLINE SILICON REGIONS AND NON-MEMORY FET CHANNEL

Ronald W. Brower, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 20, 1978, Ser. No. 962,422
Int. Cl.[2] H01L 7/34, 11/00; B01J 17/00
U.S. Cl. 148—1.5 6 Claims



1. In a process for forming an integrated circuit including at least one non-memory field effect transistor and at least one polysilicon component on a semiconductor substrate and wherein the threshold voltage of the field effect transistor and the resistance of the polysilicon component are determined by the impurity concentration therein, the improvement wherein, prior to forming the transistor gate electrode and circuit interconnections, the threshold voltage-determining concentration and the resistance-determining impurity concentration of at least a portion of the polysilicon component are established simultaneously in the partially completed integrated circuit which comprises the substrate having a source and drain formed therein and field insulation formed selectively thereon, by:

forming a layer of polysilicon on the field insulation in a predetermined pattern of at least one component, the size of the component being selected to provide a given resistance for a given impurity concentration therein;

forming a window in the insulating oxide over the location of the transistor channel;

selectively implanting the channel and the polysilicon component to establish the given threshold voltage-determining impurity concentration in the channel and the given resistance-determining impurity concentration in at least the portion of the polysilicon component; and

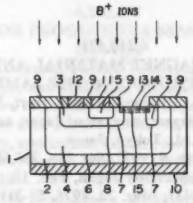
forming a non-memory gate insulator over the transistor channel.

4,210,466

PROCESS FOR PREPARING HEAT SENSITIVE SEMICONDUCTOR SWITCH

Yutaka Mihashi, and Josuke Nakata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,627
Claims priority, application Japan, Dec. 5, 1977, 52-146245
Int. Cl.[2] H01L 23/56, 29/66, 21/263
U.S. Cl. 148—1.5 3 Claims



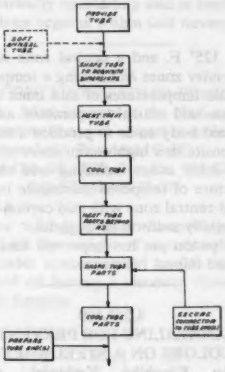
1. A process for preparing a heat sensitive semiconductor switch which comprises a step of preparing a first conductive type silicon substrate; a step of forming a first region by diffusing a second conductive type impurity from at least one main surface of said silicon substrate; a step of forming a second region having a surface exposed part of said silicon substrate by diffusing a second conductive type impurity from the other main surface of said silicon substrate; a step of forming a third region by diffusing a first conductive type impurity in said second region; a step of coating a metal electrode at the surface exposed part in said first, second and third regions; and a step of ion implantation of a second conductive type deciding impurity in the surface exposed part of the substrate in the second region at least after forming said first second and third regions.

4,210,467

METHOD OF MAKING A REINFORCEMENT FOR VEHICLE DOORS

Stefan Klatzer, Schloss Neuhaus, and Winfried Dickhoff, Paderborn, both of Fed. Rep. of Germany, assignors to Benteler Werke AG, Paderborn, Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 960,593
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750867
Int. Cl.[2] C21D 9/08, 7/14
U.S. Cl. 148—12 R 8 Claims



1. A method of making a tubular reinforcing element, particularly for vehicle doors, comprising the steps of providing a tubular element composed of steel containing 0.14 to 0.18% by weight of carbon, 0.15 to 0.30% by weight of silicon, 1.60 to 1.80% by weight of manganese, 1.90 to 2.10% by weight of chromium, 0.45 to 0.60% by weight of molybdenum and at least 0.015% by weight of aluminum; annealing the tubular element at a temperature of between 900° to 930° C. and thereupon cooling it; heating portions of the tubular element to a temperature above the point A_3 of the iron-carbon equilibrium diagram; deforming the thus heated portions to impart to them the desired shape; and cooling the tubular element.

4,210,468

PISTON PIN AND METHOD FOR MAKING SUCH

Sherwood W. McGee, Lisle, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Aug. 17, 1978, Ser. No. 934,337
Int. Cl.[2] C21D 9/08
U.S. Cl. 148—12.4 5 Claims

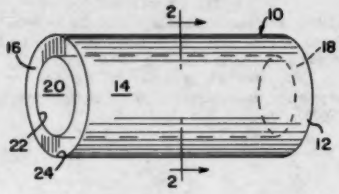
1. A method of making a piston pin rod particularly adapted for use in an internal combustion engine, said method comprising the steps of:

(1) forming a steel bar stock having a uniformly distributed carbon content beig in a range by weight of 0.25 to 0.6 % into a piston pin having an elongated cylindrical body with a center aperture and with an annular wall of a predetermined wall thickness, said annular wall extending between spaced end walls,

(2) heating said body to a temperature above the critical temperature of said steel with a first heating means to produce a uniform austenitic microstructure within said annular wall,

(3) cooling said body to a temperature below said critical temperature at a rate so as to produce a microstructure of hard martensite throughout said annular wall,

(4) applying induction heating along an outer surface of said annular wall to provide zones at different temperatures within said annular wall comprising a thin outer annular zone having a temperature above said critical temperature, a thin inner annular zone having a temperature not



exceeding 325° F. and a central zone intermediate said inner and outer zones and having a temperature gradient between said temperatures of said inner and outer zones and less than said critical temperature, and

(5) cooling said body so as to produce a microstructure of hard martensite in a high compressive stress state in said inner and outer zones including said end walls, and a microstructure of tempered martensite in a tensile stress state in said central zone with said carbon content remaining substantially uniform throughout,

wherein said piston pin has improved tensile strength, fatigue life and impact resistance.

4,210,469

PROCESS OF ANNEALING FOR PREVENTING TEMPER COLORS ON A STEEL SHEET

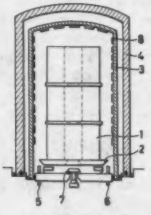
Shoji Shimada; Kazuhiko Yoshinari, and Hidefumi Koyakumaru, all of Kitakyushu, Japan, assignors to Nippon Steel Corp., Ote, Japan

Continuation of Ser. No. 592,532, Jul. 2, 1975, abandoned. This application Sep. 12, 1977, Ser. No. 832,578

Claims priority, application Japan, Jul. 11, 1974, 49-79425

Int. Cl.[2] C21D *1/48*

U.S. Cl. 148—16 **2 Claims**



1. In a method for box annealing a cold rolled steel strip coil at a temperature of 650° to 750° C. in a furnace in which a protective furnace gas containing small amounts of water vapor therein is circulated, said cold rolled steel strip coil being susceptible to the development of temper colors on the surface thereof during the box annealing at said temperature range, and then cooling the thus-annealed steel strip coil, the improvement wherein an iron-base material capable of being oxidized at low temperatures is placed within the circulating path of the furnace gas in the furnace at a position inside an inner cover of the furnace and above the furnace bottom, where the iron-base material is at a temperature which is between 50 and 100° C. lower than that of the steel strip coil in the cooling step of the annealing cycle so as to ensure that the iron-base material first reacts with the water vapor during the cooling step to produce a reducing furnace atmosphere, thereby preventing the formation of temper colors on the steel strip, said iron-base material being one selected from the group consisting of lathe turnings of cast iron and steel scraps.

4,210,470

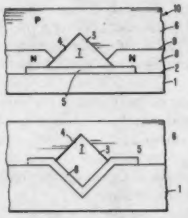
EPITAXIAL TUNNELS FROM INTERSECTING GROWTH PLANES

John C. Marinace, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 17,230, Mar. 5, 1979. This application Jun. 13, 1979, Ser. No. 48,245

Int. Cl.[2] H01L *29/04, 29/06*

U.S. Cl. 148—33.2 **7 Claims**



1. A crystalline structure comprising a substrate and a body of a crystal, said substrate having a crystallographically oriented surface that has two preferential growth planes that intersect said surface and that intersect each other;

a shape defining crystallographic growth inhibiting design on the surface of said substrate; and

a grown monocrystalline body epitaxial with said substrate enclosing a void governed at said surface by the shape of said design.

4,210,471

PERMANENT MAGNET MATERIAL AND PROCESS FOR PRODUCING THE SAME

Tetsuhito Yoneyama, Ichikawa; Tetsuo Hori, Sugamachi, and Teruhiko Ojima, Nagareyama, all of Japan, assignors to TDK Electronics, Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1977, Ser. No. 766,686

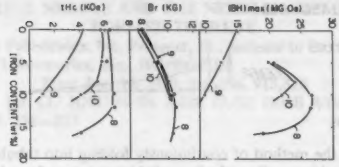
Claims priority, application Japan, Feb. 10, 1976, 51-13600; Mar. 16, 1976, 51-28431; Mar. 22, 1976, 51-31131

Int. Cl.[2] H01F *1/08*

U.S. Cl. 148—102 **42 Claims**

1. A permanent magnet of R_2Co_{17} type crystal structure consisting essentially of at least one rare earth metal in an amount of from 24 to 28% by weight, copper in an amount of from 5 to 12% by weight, iron in an amount of from 8 to 15%

by weight, a total combined amount of cobalt and iron being from 56 to 70.8% by weight, and niobium in an amount of from



0.2 to 4% by weight, all percentages being based on the total weight of magnet.

4,210,472

MANUFACTURING PROCESS OF SEMICONDUCTOR DEVICES

Hans Hoffmann, Reute, and Peter Krieger, March, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,355
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755168
Int. Cl.² H01L *21/22*
U.S. Cl. 148—187 **8 Claims**

1. A method of manufacturing a semiconductor device comprising the steps of:

coating to one conductivity type by means of a doping agent the surface layer of a semiconductor substrate of the other conductivity type whereby a PN-junction is formed;

forming a mesa structure from said substrate; and

diffusing in said doping agent so as to fix the depth of the PN-junction within the semiconductor substrate while simultaneously passivating said mesa structure.

4,210,473

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

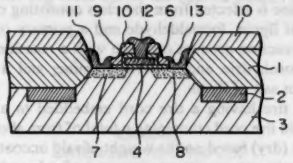
Mikio Takagi, Kawasaki; Hajime Kamioka, Yokohama; Haruo Shimoda, Tokyo, and Hidekazu Miyamoto, Machida, all of Japan, assignors to Fujitsu Limited, Japan

Filed Oct. 30, 1978, Ser. No. 955,754
Claims priority, application Japan, Nov. 29, 1977, 52-143189
Int. Cl.² H01L *21/223*
U.S. Cl. 148—189 **26 Claims**

1. A process for producing a semiconductor device, comprising the steps of:

providing a wafer comprising a single crystal silicon substrate, an insulating layer selectively covering said substrate, and a polycrystalline silicon layer selectively covering said insulating layer and substrate to leave at least two portions of said single crystal silicon substrate exposed;

subjecting said wafer to a diffusing operation in which said wafer is placed in a capsule together with a material capable of releasing an impurity substance, in which the capsule is evacuated and heated to a temperature sufficient to cause the impurity substance to be released from said



material and to simultaneously diffuse into both the exposed portions of the substrate and the polycrystalline silicon layer in amount sufficient to form at least one pair of source and drain regions in said substrate and at least one gate in said polycrystalline silicon for device; and

selectively electrically connecting said at least one gate and source and drain regions within said device.

4,210,474

SILICONE CONTAINING SOLID PROPELLANT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Kumar N. R. Ramohalli, Pasadena, Calif.

Filed Oct. 16, 1978, Ser. No. 951,830
Int. Cl.² C06B *45/10*
U.S. Cl. 149—19.2 **8 Claims**

1. A composite solid propellant comprising a continuous phase of 10 to 14% by weight of cured, solid elastomeric polybutadiene binder containing 0.1 to 3% by weight of a polysiloxane liquid oil having a viscosity from 500 to 2,000 centistokes of the formula:

where n is an integer and R is an alkyl of 1 to 5 carbon atoms and said binder contains a dispersion of in excess of 85% by weight of combustible solids including metal and oxidizer.

4,210,475

ADHESION METHOD EMPLOYING LIGNIN AMINE CORD ADHESIVES

Terry C. Neubert, Ravenna, and Donald W. Anderson, Norton, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 826,281, Aug. 22, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,432
Int. Cl.² B29H *5/02*; B60C *5/00*; C09J *5/00*
U.S. Cl. 156—110 A **11 Claims**

1. In a method for adhering a tire cord to a vulcanized conjugated diene rubber compound by treating said tire cord with a composition comprising an aqueous alkaline dispersion of from about 10 to 30% by weight (as dry solids) of a mixture of 100 parts of a rubbery vinyl pyridine copolymer containing about 50 to 95% of a conjugated diolefin, about 5 to 40% of vinyl pyridine and about 0 to 40% of a styrene; about 1.0 to 30 parts water soluble resorcinol and formaldehyde reaction product having a pH of 8–11 and heat treating said tire cord to remove the water and to heat set the solids from said composition and to deposit on said tire cord from said composition a total of from about 2 to 30% by weight (solids), said heat

treatment being conducted at temperatures of from about 150° C. to 260° C. for from about 30 to 150 seconds, cooling said treated tire cord, combining said cooled treated tire cord with an unvulcanized vulcanizable rubber consisting essentially of conjugated diene as the major elastomer component, and vulcanizing the same, the improvement which comprises using as the resorcinol formaldehyde reaction product a reaction product of resorcinol, formaldehyde and a lignin amine wherein the lignin amine is selected from the class consisting of a reaction product of lignin, formaldehyde and a primary or secondary amine; a reaction product of lignin with a reaction product of an epichlorohydrin and a tertiary amine; and a quaternary ammonium salt of lignin.

4. In a tire having a tire cord embedded in a vulcanized rubber, said tire cord containing a total of from about 2 to 30% by weight (dry) based on the weight of said uncoated tire cord of an adhesive composition comprised of a deposit of heat set mixture containing 100 parts of a rubbery vinyl pyridine copolymer and 1 to 30 parts of a resin produced in a basic media said adhesive composition forming a bond between said tire cord and said rubber, wherein the improvement comprises said resin being a lignin amine and resorcinol and formaldehyde reaction product, wherein the lignin amine is selected from the class consisting of a reaction product of lignin, formaldehyde and a primary or secondary amine; a reaction product of lignin with a reaction product of an epichlorohydrin and a tertiary amine; and a quaternary ammonium salt of lignin.

4,210,476

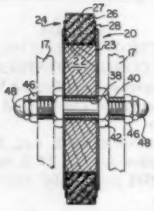
METHOD OF MAKING AN INKING RING

James G. McKay, Skokie, Ill., assignor to Kiwi Coders Corporation, Wheeling, Ill.

Division of Ser. No. 800,222, May 25, 1977, Pat. No. 4,126,090, which is a continuation of Ser. No. 669,645, Mar. 23, 1976, abandoned, which is a continuation of Ser. No. 477,654, Jun. 10, 1974, abandoned. This application Jul. 17, 1978, Ser. No. 925,188

Int. Cl.[2] B41F *31/22*

U.S. Cl. 156—112 **8 Claims**



1. A method of manufacturing an inking ring comprising the steps of forming an annular band of ink-absorbent material, forming a thin walled annular shell having a floor and side walls formed of ink-impervious vulcanizable thin sheet material, seating said band within the interior of said formed shell to expose the peripheral portion of the said band radially outward of said shell, applying a vulcanizable adhesive material within said shell interior before seating said band therewithin and vulcanizing such assembly simultaneously forming a unitary body.

4,210,477

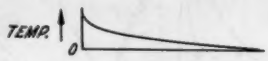
TUBE FORMING METHOD

William S. Gillespie, Barrington, and Hal L. Inglis, Fox River Grove, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jun. 30, 1978, Ser. No. 921,092

Int. Cl.[2] B29C *19/02*

U.S. Cl. 156—203 **3 Claims**



1. In the method of continuously folding into tubular form, and then heat sealing, the lapped side margins of an elongated continuous strip of non-ferrous metal foil coated on its opposed lateral surfaces with a heat softenable plastic material capable of bonding to itself when softened, the longitudinal edges of the metal foil being exposed at both lateral extremeties of the strip: feeding the tubular form having lapped side margins in encompassing relation on to a circular mandrel of non-ferrous material, positioning inside the tubular form a bar of magnetizable material aligned on the axis of the heat seal, surrounding the tubular form so fed with an induction coil excited by high frequency current causing the heat softenable material to melt to form the heat seal between the lapped surfaces, and regulating the inductance field to be of sufficient intensity to also assure the plastic melts to cover the exposed foil edges in the area of the heat seal but without melting the plastic on the outside of the seam.

4,210,478

METHOD OF MAKING A CATHETER

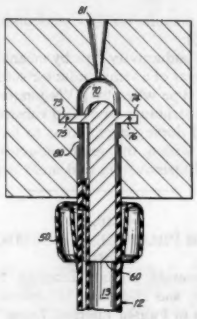
Suryakant R. Shoney, Cranston, R.I., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 655,636, Feb. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,298, Jan. 8, 1975, abandoned, which is a division of Ser. No. 358,309, May 8, 1973, Pat. No. 3,865,666. This application Dec. 2, 1977, Ser. No. 856,861

The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl.[2] B29C *11/00*

U.S. Cl. 156—242 **19 Claims**



1. The process of manufacturing a catheter which comprises:
a. providing an elastomeric catheter shaft having a drainage lumen extending longitudinally thereof;
b. inserting a guide in the drainage lumen of said shaft;
c. inserting at least a portion of said shaft, including at least a portion of said guide in a mold;
d. molding a hollow tip and simultaneously bonding said tip to the distal end of said shaft by introducing elastomeric material under pressure into said mold; and

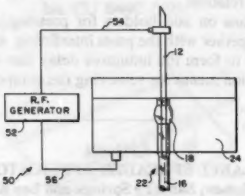
e. providing at least one drainage eye through said tip and communicating via the hollow tip with said drainage lumen.

4,210,479

METHOD FOR BONDING A PLASTIC TUBING TO A METAL NEEDLE AND THE NEEDLE ASSEMBLY FORMED THEREBY

Eugene Fabisiewicz, Mt. Prospect, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 14, 1978, Ser. No. 915,516
Int. Cl.[2] B29C *19/04*; B23K *13/02*; H05B *9/04*
U.S. Cl. 156—273 **20 Claims**



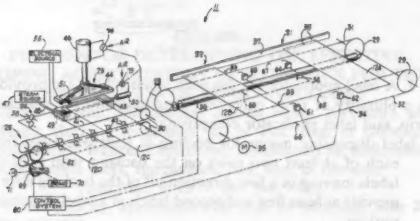
1. A method for bonding the end portion of a plastic tubing to a metal needle including the steps of: applying a cement to the inner end of the needle to be inserted within the tubing end portion, placing the needle and tubing within a die comprising two parts, one part being made of an insulating material within which the needle is placed and the other part being metallic within which the tubing end portion is placed, inserting the coated inner end of the needle within the tubing end portion, and applying a high frequency voltage across the outer end of the needle and the metallic part of the die to heat seal the tubing end portion surrounding the coated inner end of the needle to the inner end of the needle.

4,210,480

STEAM SEAL OF BAG PLY

Fred B. Wilharm, Cantonment, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,545
Int. Cl.[2] B32B *3/00*
U.S. Cl. 156—308.4 **25 Claims**



1. A bag ply sealer to seal together two contiguous edges of inner heat sealable ply means in a bag form, comprising in combination,

an openable and closable steam chest positioned on a first path,

valve means connected to supply steam to said chest,

conveyor means to move a bag form along said first path to said steam chest,

power means connected to open and to close said steam chest in a condition enveloping an open part of the bag form with two contiguous edges of the heat sealable ply means exposed to the interior of said steam chest,

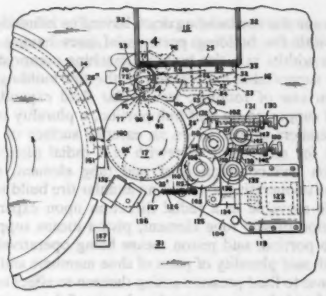
and control means connected to said power and valve means, to close said steam chest over the open part of a bag form and to stop the conveying of the bag form, to control said valve means to apply steam to said steam chest to enter the open part of a bag to heat the two contiguous edges of the heat sealable ply means, to close said valve means, and to open said steam chest and restart the conveying of the bag form by said conveyor means to move the bag form out of the opened steam chest.

4,210,481

LABELING MACHINES

Edwin K. Wolff, Stockholm, and Alfred F. Schwenzer, Totowa, both of N.J., assignors to NJM, Inc., Hoboken, N.J.

Filed Nov. 14, 1978, Ser. No. 960,709
Int. Cl.[2] B32B *1/00*
U.S. Cl. 156—357 **11 Claims**



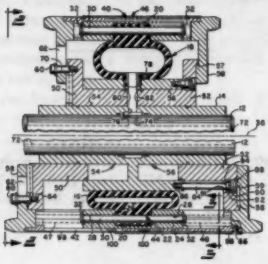
1. In a labeling machine a first continuously rotatable drum provided with suction means to enable it to carry separate labels on its peripheral surface, means for supplying separate labels in given succession to said drum with the face sides of such labels turned outwardly, a second continuously rotatable drum rotating in the opposite direction at a peripheral speed equal to that of said first drum, said second drum being positioned adjacent to said first drum and provided with suction means to receive the labels from said first drum and to retain the labels on its peripheral surface with their back sides outermost while being adhesively activated, and printing means adjacent to said first drum and positioned in circumferentially spaced relation between said label supply means and said second drum for printing indicia on the face sides of the labels carried by said first drum, said printing means comprising a printing cylinder mounted for rotation about a first axis at a peripheral speed equal to the peripheral speed of said first drum, means normally supporting said printing cylinder with said first axis stationarily located to maintain said printing cylinder in operative printing position relative to said first drum during the rotative movements of said drum and operable to move said printing cylinder by a translatory movement relative to said first drum about a second axis, operable means connected to said supporting means for moving the latter about said second axis to shift said printing cylinder from an operative printing position to a withdrawn inoperative printing position and vice versa, and vacuum operated means operatively connected to the suction means of said first drum and to said operable means, and operable when a label is not carried by said first drum for a printing operation by said printing cylinder to actuate said operable means to withdraw said printing cylinder.

4,210,482

VARIABLE WIDTH TIRE BUILDING DRUM

Marcus H. Collins, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 25, 1978, Ser. No. 954,400
Int. Cl.[2] B29H 17/16
U.S. Cl. 156—415 11 Claims



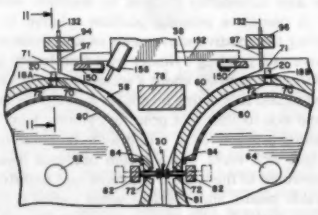
1. An annular tire building drum having an infinitely variable axial width for building portions of tires having infinitely variable widths in a tire building machine comprising a hub portion supportable for rotation in the tire building machine about an axis of rotation, an annular fluid expandable tube element supported on said hub portion, a plurality of pairs of shoe members supported on an exterior surface of said tube element for movement therewith in a radial direction upon expansion and contraction of said tube element, said shoe members cooperating to define an annular tire building surface which is movable in a radial direction upon expansion and contraction of said tube element, piston means supported by said hub portion, said piston means being operatively associated with said plurality of pairs of shoe members and movable in response to fluid pressure acting thereon to effect movement of one of said shoe members of each pair of shoe members in a first direction parallel to said axis of rotation and to effect movement of the other of said shoe members of each pair in a direction opposite to said first direction to infinitely vary the axial width of the building surface defined by said plurality of shoe members, stop means for limiting the axial movement of said shoe members, said stop means being adjustable to allow the axial width of said tire building surface to be infinitely variable between a predetermined minimum width and a predetermined maximum width to enable various width tires to be built on the adjustable width building surface.

4,210,483

APPARATUS FOR MAKING AN INDUCTIVE DELAY LINE COMPONENT

Bryan P. Kent, San Diego, Calif., assignor to Variani Associates, Inc., Palo Alto, Calif.

Filed Apr. 9, 1979, Ser. No. 28,232
Int. Cl.[2] B31F 1/00
U.S. Cl. 156—443 18 Claims



1. Apparatus for making an inductive delay line component composed of a pair of bobbin elements of inductive material, each having an elongated connecting plate with a longitudinal row of spaced posts extending perpendicularly from one side thereof, the apparatus comprising:

a frame;

a pair of holders mounted on said frame, each having means for holding a bobbin element therein;

indexing means for moving said holders to position the bobbin elements therein at a pair of winding stations;

winding means at each winding station for winding wire around all the posts on the bobbin elements simultaneously;

said indexing means being operable to move said holders to a joining station with the bobbin elements in close confronting relation;

joining means on said holders for pressing the bobbin elements together with the posts interfitting, and bonding the elements to form the inductive delay line component;

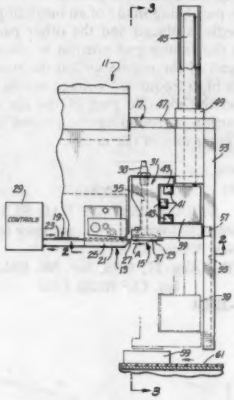
and extraction means for removing the component from said holders.

4,210,484

LABEL SPREADER APPLICATOR

Michael Crankshaw, Santa Fe Springs, and Leo Kucheck, Irvine, both of Calif., assignors to Label-Aire Inc., Fullerton, Calif.

Filed Aug. 3, 1978, Ser. No. 930,722
Int. Cl.[2] B32B 31/00
U.S. Cl. 156—542 19 Claims



1. A label applicator for use with labels which are provided in a plurality of rows extending longitudinally on a backing strip, said label applicator comprising:

label dispensing means for peeling at least one label from each of at least two rows on the backing strip with the labels moving in a first direction off of the backing strip to provide at least first and second labels at a label dispensing station;

label separating means for receiving from the label dispensing means at the label dispensing station the first and second labels which have been peeled from the backing strip and separating the first and second labels in a direction generally transverse to said first direction to increase the distance between the first and second labels;

transferring means for transferring the first and second labels which have been separated by said label separating means to at least one article; and

said label separating means including first and second label receivers for receiving the first and second labels, respectively, means for mounting said first label receiver, and means for mounting said second label receiver for move-

ment relative to the first label receiver to effect separation of the first and second labels, and each of said label receivers including means for releasably retaining the labels supplied thereto.

4,210,485

WALLPAPER APPLICATOR

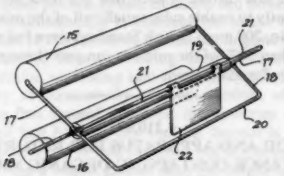
Ernest C. Lake, Lot 16, Glenrock Pde., Koolewong, New South Wales, Australia (2256)

Filed Jul. 31, 1978, Ser. No. 929,310

Claims priority, application Australia, Aug. 8, 1977, PD1133

Int. Cl.² B44C 7/00

U.S. Cl. 156—577 **1 Claim**



1. A device for applying wallpaper and the like to a surface comprising first and second rollers each rotatably mounted on the open ends of U-shaped bars, said bars being held in fixed relationship with each other to form an X on each side and having a third roller mounted between the points of axis of said U-shaped bars, and a brake pivotally mounted on the outer closed portion of one of said U-shaped bars, said wallpaper being fed from the support over said third roller and under said first roller which is adapted to press successive areas of the wallpaper against successive areas of the surface as the wallpaper is fed from the support onto the surface, said second roller acting as an idler and adapted to contact one area of the unpapered surface at the same time that said first roller is pressing the wallpaper against another area of the surface, said brake being movable to frictionally engage the wallpaper as it passes over said third roller.

4,210,486

PROCESS FOR DETERMINING THE EFFECTIVE DOPING AGENT CONTENT OF HYDROGEN FOR THE PRODUCTION OF SEMICONDUCTORS

Dietrich Schmidt, Burghausen; Johann Hofer, Kirchdorf, and Heinz Herzer, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH, Burghausen, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,571

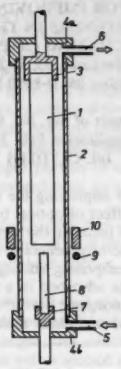
Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623350

Int. Cl.² B01J 17/34

U.S. Cl. 156—601 **1 Claim**

1. A process for determining the purity of hydrogen used in the production of semiconductors, relative to the effective doping agent content thereof, comprising the steps of:

zone drawing a silicon rod of highest purity and known specific resistance in a quartz tube havng a slightly larger internal diameter than the diameter of the silicon rod by means of an induction coil surrounding said quartz tube, moving at a speed of 0.01 to 1 cm/min., solely in the presence of the hydrogen to be tested by passing a definite amount of said hydrogen around said rod during the zone-drawing thereof and thereby doping said silicon rod with the doping agents which may be present in said hydrogen; and



determining the effective doping agent content of said hydrogen and, in turn, the purity thereof, by measuring the specific resistance of the silicon rod after zone-drawing.

4,210,487

PROCESS FOR MAKING SYNTHETIC PAPER PULP

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 648,985, Jan. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 412,510, Nov. 2, 1973, abandoned. This application Jul. 25, 1977, Ser. No. 818,490

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.² D21H 5/12

U.S. Cl. 162—146 **1 Claim**

1. A process for preparing synthetic paper comprising:

(a) heating a blend consisting essentially of a synthetic thermoplastic polymer wherein the polymer is a mixture of polystyrene and polypropylene or polyethylene in which the mixture contains more than 40 percent by weight of the polypropylene or polyethylene and the blend contains from about 0.1 to about 20 percent weight of sodium bicarbonate and whereby a molten blend is formed;

(b) extruding the molten blend from a die into a zone of reduced pressure to produce an extrudate;

(c) attenuating the extrudate while the polymer is in its molten or amorphous state with the attenuation caused by withdrawing the extrudate from the die at a linear rate of from about 20 to about 200 times the linear ratio at which the blend reaches the lips of the die;

(d) subjecting the attenuated extrudate, which is now fibrous and solid, to sufficient force to cause the extrudate to break into fibers suitable for mixing with cellulosic pulp; and

(e) the resulting fibers, in an amount of about 10 to 50 weight % of the total weight, are mixed with bleached kraft paper fibers laid out in a sheet and formed into a paper by application of heat and pressure.

4,210,488

PROCESS FOR IMPROVING THE DRY STRENGTH OF PAPER AND FOR IMPROVING THE EFFECT OF OPTICAL BRIGHTENERS IN THE PREPARATION OR COATING OF PAPER

Peter J. Reuss, Starenkamp 33, D-2080 Pinneberg, and Josef Weigl, Bauseweinallee 86, D-8000 Muenchen 60, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 841,972, Oct. 13, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,543
Int. Cl.[2] D21H *3/80*
U.S. Cl. 162—162 13 Claims

1. In a process for improving the dry strength of paper and for improving the effect of optical brighteners in the preparation of paper which includes the step of adding fillers and/or pigments and anionic brighteners to the paper making process the improvement comprising adding to paper making pulp a polypiperidine halide adsorbed in a dispersed state on a fine-particle organic or inorganic carrier and thereafter adding the anionic brightener to said paper making pulp.

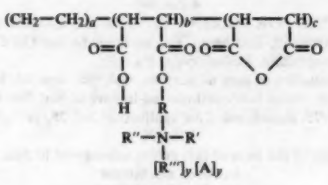
4,210,489

METHOD OF IMPARTING WET STRENGTH TO PAPER PRODUCTS

Sheldon B. Markofsky, Olney, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,716
Int. Cl.[2] D21D *3/00*
U.S. Cl. 162—164 R 10 Claims

1. A method of imparting a combination of wet strength and water absorbency to paper formed from cellulosic fibers comprising contacting the cellulosic fibers with an aqueous solution of a composition comprising an effective amount to impart wet strength and water absorbency of (1) a copolymer selected from an at least partially hydrolyzed ethylene/maleic anhydride or an ethylene/maleic anhydride half ester, having the general formula:



wherein R, R', R'', and R''' are each of C_1–C_4 alkyl or alkoxy groups; A is a quarternary anion; Y has a value of 0 to 1 and a is an integer, and b and c are integers including 0, such that the ratio of a to b plus c is 2:1 to 1:2, and (2) a reaction product formed by reacting an aqueous mixture of reactants (a) a C_2–C_{12} secondary alkyl amine; (b) a C_1–C_{25} primary amine and (c) a member selected from epihalohydrin or a dihalo monohydroxy C_3–C_4 alkane; the equivalent ratio of reactant (c) to (b) is 1:0.009 to 0.5, and of reactants (c) to (b) plus (a) is 1:0.22 to 1.3, and the weight ratio of reaction product (2) to copolymer (1) being from about 0.2:1 to 50:1 and treating the paper formed from said cellulosic fibers to sufficient elevated temperature to cause drying of the paper product and curing of the agents therein.

4,210,490

METHOD OF MANUFACTURING PAPER OR CARDBOARD PRODUCTS

John H. Taylor, St. Austell, England, assignor to English Clays Lovering Pochin & Company, Limited, St. Austell, England

Continuation-in-part of Ser. No. 813,512, Jul. 7, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 970,973
Int. Cl.[2] D21H *3/28*
U.S. Cl. 162—175 8 Claims

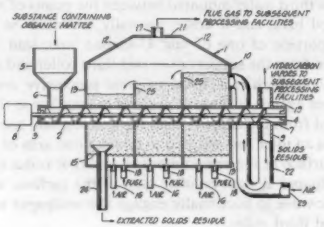
1. A method of manufacturing a paper or cardboard product of improved strength characteristics which method comprises in sequence the steps of mixing an aqueous solution or dispersion of a cationic starch which contains primary, secondary or tertiary amino groups or quaternary ammonium groups and has a nitrogen content ranging from about 0.1 to about 0.25% by weight, with an aqueous suspension of a kaolinitic clay filler which contains not more than 50% by weight of particles smaller than 2 microns and not more than 35% by weight of particles smaller than 1 micron, to form a mixture containing flocs consisting essentially of starch and clay filler; thereafter adding the mixture thus obtained to an aqueous stock of cellulosic fibres to form a furnish containing the flocs of starch and clay filler, and the cellulosic fibres; and then forming the furnish into a paper or cardboard product; wherein the product of the rate at which shear is applied to, and the period for which the shear is applied to, said flocs during the formation of said mixture and said furnish is such that the flocs are reduced in size sufficiently to enable substantially all of the mixture to pass through a No. 200 mesh British Standard sieve but not so much that more than 90% of the mixture can pass through a No. 300 mesh British Standard sieve.

4,210,491

METHOD AND APPARATUS FOR RETORTING A SUBSTANCE CONTAINING ORGANIC MATTER

Bernard L. Schulman, Golden, Colo., assignor to Tosco Corporation, Los Angeles, Calif.

Continuation of Ser. No. 737,466, Nov. 1, 1976, abandoned. This application Oct. 16, 1978, Ser. No. 951,723
Int. Cl.[2] C10B *1/10, 23/00, 47/20, 49/18*
U.S. Cl. 201—2.5 21 Claims



1. An apparatus for converting a substance containing organic matter into hydrocarbon vapors and solids residue comprising:

(a) a fluidized bed housing having an upstream end and a downstream end;

(b) a substantially cylindrical retort, extending through and stationary relative to said fluidized bed housing and having an upstream end and a downstream end, each end being outside of said housing, the longitudinal axis of said retort being substantially parallel to a horizontal plane;

(c) feeding means for feeding the substance containing organic matter into said retort, said feeding means communicating with the upstream portion of said retort;

(d) means located within said retort for moving the substance containing organic matter from the upstream portion of said retort to the downstream portion thereof;

(e) solids residue removing means for removing solids residue from said retort, said solids residue removing means communicating with the downstream portion of said retort;

(f) solids residue introducing means for introducing said solids residue removed from said retort into said fluidized bed housing to employ said solids residue as particles of a fluidized bed, one end of said introducing means communicating with said solids residue removing means and the other end thereof communicating with the upper upstream portion of said fluidized bed housing;

(g) solids residue extracting means for extracting solids residue from said fluidized bed housing and communicating with the lower downstream portion of said fluidized bed housing;

(h) fluidizing means for maintaining within said fluidized bed housing a fluidized bed of heated particles of solids residue with which to heat said retort;

(i) heating means for heating the particles;

(j) hydrocarbon vapors removing means for removing hydrocarbon vapors from said retort, said hydrocarbon vapors removing means communicating with said retort at at least one point located downstream, with respect to the flow of said substance containing organic matter in said retort, from said feeding means;

(k) solids residue flow controlling means for controlling the flow of the solids residue while the solids residue is being employed as particles of the fluidized bed such that the solids residue flow from the upstream portion to the downstream portion of said fluidized bed housing and in a direction substantially countercurrent to the flow within said retort of the substance containing organic matter, said solids residue flow controlling means including at least one partition separating said fluidized bed housing into a plurality of successively adjacent sections aligned such that the first thereof is nearest the upstream end of said fluidized bed housing and the last thereof is nearest the downstream end of said fluidized bed housing, each partition having a height greater than the height of the top of the retort and less than the height of the inside of the fluidized bed housing top immediately thereabove, each partition which is downstream, with respect to the flow of particles in said fluidized bed housing, from another partition having a height which is less than the height of the partition immediately upstream therefrom, with respect to the flow of particles in said fluidized bed housing; and

(l) regulating means for regulating the levels of the fluidized bed sections maintained within the fluidized bed housing whereby solids residue which is in a section of said fluidized bed housing upstream, with respect to the flow of particles in said fluidized bed housing, from another section thereof may be caused to overflow into the section of the fluidized bed housing which is immediately downstream therefrom with respect to the flow of particles in said fluidized bed housing.

4,210,492

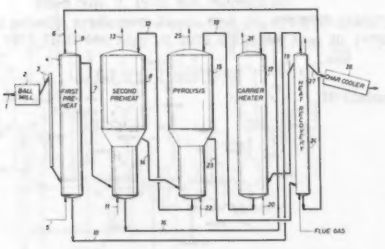
PROCESS FOR THE PYROLYSIS OF COAL IN DILUTE- AND DENSE-PHASE FLUIDIZED BEDS

Scott C. Roberts, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 14, 1977, Ser. No. 777,196

Int. Cl.[2] C10B *23/00, 49/22;* **C10G** *1/02*

U.S. Cl. 201—12 **4 Claims**



1. A process for the pyrolysis of coal comprising,

(a) countercurrently contacting coal subdivided to a particle size fluidizable in gas in the form of a relatively cool, upwardly moving fluidized mass in a first vertically-oriented preheating zone with an inert relatively hot first particulate heat carrier thereby transferring sensible heat from the heat carrier to the subdivided coal and heating said coal to an elevated temperature not above the boiling point of water, said coal being fluidized in gas in a manner to create a dilute-phase fluidized mass in said first preheating zone and said particulate heat carrier being introduced in the upper portion of the preheating zone and having a particle size and density such that it falls through the dilute-phase fluidized mass at a substantially uniform rate and collects in the lower portion of the vertical preheating zone as a relatively cool first particulate heat carrier;

(b) recovering the bulk of said subdivided coal at elevated temperature in the upper portion of said preheating zone and passing said recovered coal to a second preheating zone;

(c) recovering said relatively cool first particulate heat carrier in the lower portion of said preheating zone, and passing said recovered heat carrier to a heat recovery zone;

(d) introducing said subdivided coal at elevated temperature into a second verticaly-oriented preheat zone as a dense phase, fluidized mass in gas, and countercurrently contacting said fluidized mass with a second inert particulate heat carrier heated to a temperature above the boiling point of water to transfer sensible heat from the heat carrier to the coal and remove any water in the coal, said second particulate heat carrier being introduced in the upper portion of the second preheat zone wherein its particle size and density are such that it falls at a substantially uniform rate and collects in the lower portion of the vertical zone along with a minor amount of entrained solid material;

(e) removing water from the upper portion of said second preheat zone, and also removing preheated subdivided coal separately from the upper portion of the second preheat zone;

(f) recovering said second particulate heat carrier from the lower portion of said second preheat zone and passing said recovered heat carrier to a carrier heating zone wherein the carrier's temperature is raised to a level above that required for pyrolysis, and passing said second particulate heat carrier after heating to the upper portion of a pyrolysis zone;

(g) introducing said subdivided preheated coal at elevated temperature into a vertically-oriented pyrolysis zone as a dense phase, fluidized mass, and contacting said fluidized mass with said second particulate heat carrier heated to a temperature above that required for pyrolysis to transfer sensible heat from the heat carrier to the subdivided coal and obtain a vapor phase containing hydrocarbonaceous fluids and a char residue, said second particulate heat carrier having been passed from the carrier heating zone and introduced in the upper portion of the pyrolysis zone wherein its particle size and density are such that it falls at a substantially uniform rate and collects in the lower portion of the vertical pyrolysis zone along with a minor amount of entrained solid material;

(h) recovering said hydrocarbonaceous fluids from the upper portion of said pyrolysis zone;

(i) separating said second particulate heat carrier in the lower portion of said pyrolysis zone from entrained solid material and char residue and passing said separated second particulate heat carrier to the second preheat zone;

(j) removing solid char residue from the dense fluidized phase in the pyrolysis zone and passing the char residue to a heat recovery zone;

(k) introducing the solid char residue from the pyrolysis zone into a heat recovery zone, and countercurrently contacting said residue with the relatively cool, first particulate heat carrier from the preheating zone to transfer sensible heat from the residue to the first particulate heat carrier, and returning said relatively hot first particulate heat carrier to the first preheating zone;

(l) recovering said relatively cool particulate char residue from the heat recovery zone.

4,210,493

C-NITROSO COMPOUNDS AS ANAEROBIC POLYMERIZATION INHIBITORS FOR ACRYLIC ACID OR METHACRYLIC ACID

Thomas Stewart, Andalusia, and Richard F. Merritt, Ft. Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1976, Ser. No. 671,801
Int. Cl.[2] C07C *51/50, 57/04;* B01D *3/34*
U.S. Cl. 203—8 **5 Claims**

1. A method of inhibiting the polymerization of acrylic or methacrylic acid at ambient or above ambient temperatures, said method comprising contacting said acid with a polymerization inhibiting compound having the formula:

R—NO

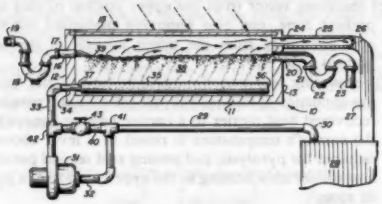
where R is alkyl in an amount of from 0.01% to 0.5% by weight based upon the weight of the acid during the preparation, purification or storage of said acid under substantially anaerobic conditions.

4,210,494

SOLAR DESALINATION SYSTEM

William A. Rhodes, 4421 N. 13th Pl., Phoenix, Ariz. 85014

Filed May 3, 1978, Ser. No. 902,445
Int. Cl.[2] C02B *1/06*
U.S. Cl. 203—10 **10 Claims**



9. In the solar desalination of salt water, the method comprising the steps of:

(a) introducing salt water into a tank having a bottom wall and a transparent top cover, said salt water in said tank forming a body of said water having a top surface, the space in the tank above the top surface being occupied by a first mixture of air and water vapor;

(b) withdrawing water from said body of water in the tank to maintain the top surface of the body of water substantially constant;

(c) heating the body of water and the first mixture of air and water vapor in the space above the top surface of the body of water by solar rays passing through the transparent top cover of the tank;

(d) withdrawing the first mixture of air and water vapor from said tank, the amount of water vapor in the mixture being such as to substantially saturate the air of the mixture;

(e) condensing water vapor from the first mixture in a condenser;

(f) withdrawing a second mixture of air with a residual amount of water vapor from the condenser and increasing the pressure thereof; and

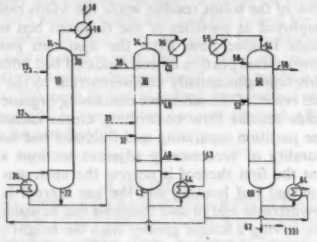
(g) forcing at a desired pressure said second mixture into a sparger located slightly above the bottom wall of the tank and in the body of water in the tank, said sparger having orifices through which the pressurized second mixture passes, and which second mixture is converted to small bubbles which pass upwardly through the water body to the top surface thereof and during such passage the air in the second mixture becomes heated and substantially saturated with water vapor transforming said second mixture to said first mixture.

4,210,495

METHANOL DISTILLATION PROCESS

Alwyn Pinto, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 14, 1978, Ser. No. 877,737
Claims priority, application United Kingdom, Mar. 11, 1977, 10403/77
Int. Cl.[2] B01D *3/14;* C07C *29/26*
U.S. Cl. 203—22 **14 Claims**



1. A process for producing purified methanol by distillation, comprising the steps of:

(a) feeding a water-methanol mixture containing small quantities of ethanol, ketones and higher alcohols to a first distillation column, taking a product methanol stream from an upper level, taking aqueous methanol containing at least 95% w/w of methanol as a side stream and taking a predominantly water stream as bottoms; and

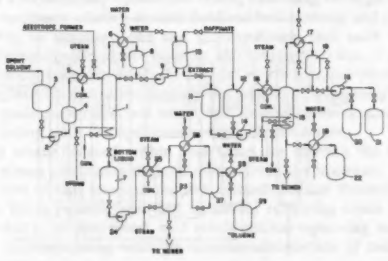
(b) feeding the aqueous methanol side stream to a second distillation column, taking a product methanol stream from an upper level and taking as bottoms a stream containing methanol, ethanol and water containing less than 40% w/w of water.

4,210,496

DISTILLATION PROCESS FOR RECOVERY OF HEXAMETHYL DISILOXANE

Wang-Mo Wong, Matteson, Ill., assignor to Arthur G. McKee & Company, Independence, Ohio

Filed Jun. 7, 1978, Ser. No. 913,531
Int. Cl.[2] B01D *3/36;* C07F *7/20*
U.S. Cl. 203—46 **16 Claims**

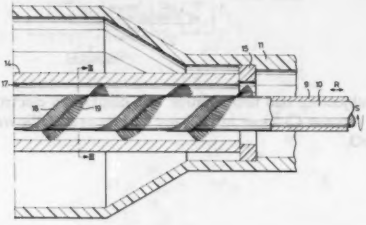


1. In a distillation process for separating a mixture of hexamethyl disiloxane (HMDO) and toluene, the improvement which comprises adding pyrrolidine to the mixture prior to distillation to form an azeotrope of HMDO and pyrrolidine and then distilling the mixture to separate and recover one fraction of the toluene and another fraction of said azeotrope.

4,210,497
METHOD FOR PROVIDING A SURFACE COATING ON THE WALL IN A CAVITY BY MEANS OF ELECTROLYTIC PLATING AND THE SURFACE COATING PRODUCED BY THE METHOD

Kaj-Ragnar Loqvist, Fagersta, and Leif-Åke Bennstedt, Falun, both of Sweden, assignors to Wave Energy Development I Vastmanland Aktiebolag, Fagersta, Sweden

Filed Jan. 30, 1978, Ser. No. 873,524
Claims priority, application Sweden, Feb. 8, 1977, 7701371
Int. Cl.[2] C25D *5/04*
U.S. Cl. 204—26 15 Claims

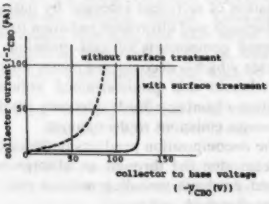


1. A method for providing a surface coating of a metal or metal alloy on the wall of an elongate cavity in a workpiece by means of electrolytic plating, the workpiece being used as cathode, comprising bringing an electrolyte containing ions of at least one metal intended for the coating into movement inside said cavity with the aid of at least one conveyor, said conveyor comprising a resilient flexible netlike or fibrous strip of electrically insulating material, helically wound around an elongate anode in said cavity, the strip being at least partly fringed or slit on the edge facing toward the cavity wall so as to form outstanding fingers bringing said strip into rotation and oscillation relative to said surface to bring said fingers into contact and adjustment with the surface being coated, thereby rapidly transporting electrolyte and gases generated during the plating at the surface being coated and in the cavity, while maintaining the electrolyte at a low temperature.

4,210,498
METHOD OF INCREASING THE AMPLIFICATION OF A TRANSISTOR THROUGH USE OF ORGANIC COMPOUNDS

Tooru Tamura, Ikeda; Nobuyuki Ojima, Katano; Sigeru Kondo, Higashi-Osaka, and Kenichirou Kishita, Kagoshima, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 7, 1975, Ser. No. 629,907
Claims priority, application Japan, Nov. 20, 1974, 49-134027; May 20, 1975, 50-60748; May 19, 1975, 50-60394; May 20, 1975, 50-60747
Int. Cl.[2] C25D *5/36*
U.S. Cl. 204—35 N 10 Claims



1. A method of treating a germanium transistor in which the minority carriers are holes, comprising:
1. anodically electrolysing said transistor in an alkali solution;
2. then dipping the transistor into an organic solution comprising a chelating agent, a thermosetting silicone resin and an organic solvent, said chelating agent being selected from the group consisting of Y-pyrones, nitrated catechols, flavones and combinations thereof; and
3. baking the thus treated transistor to cure said thermosetting silicone resin.

4,210,499
METHOD OF FORMING COLORED PATTERNS ON ALUMINUM OR ITS ALLOYS

Hatsuo Hirono, Nyuzen; Katsuyuki Nagata, Uozu, and Nobushige Doguchi, Toyama, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,464
Claims priority, application Japan, Dec. 5, 1977, 52-145192
Int. Cl.[2] C25D *11/20*
U.S. Cl. 204—38 A 6 Claims

1. A method of forming a colored pattern of wood grain on the surface of an article made of aluminum of its alloys comprising:
anodically oxidizing the surface of said article to form an oxide film on said surface;
forming a colored film on the anodized surface of said article by means of electrolytic coloring in an electrolytic bath;
dipping said article into a coating bath having a resinous coating material, selected from the group consisting of acrylic resins or alkyd resins, in the form of multilinear or multiannular patterns floated thereon to deposited a clear coated, colored wood-grain pattern on said article;
forming a colored film on the pattered anodized surface of said article by means of electrolytic coloring; and
applying a finishing coating to said article.

4,210,500
ALKALINE ZINC ELECTROPLATING BATH AND ADDITIVE COMPOSITIONS THEREFOR

Craig V. Bishop, Cleveland, Ohio, assignor to Rohco, Inc., Cleveland, Ohio

Filed Jun. 28, 1979, Ser. No. 52,741
Int. Cl.[2] C25D *3/24;* C08G *73/02, 73/04*
U.S. Cl. 204—55 Y 11 Claims

1. A composition comprising the reaction product obtained by reacting
(a) a polyhydroxyethylated polyamine having a carbon to nitrogen weight ratio of from about 2.8:1 to about 3.3:1 and a nitrogen to oxygen weight ratio of from about 1:1 to about 2.0:1, and
(b) a 3-halo-2-hydroxypropane sulfonate.

6. An aqueous alkaline electroplating bath suitable for producing bright metallic zinc deposits comprising a source of zinc ions and cyanide ions, and an effective amount, sufficient to yield a bright zinc deposit, of a bath-soluble reaction product obtained by the process of reacting
(a) a polyhydroxyethylated polyamine having a carbon to nitrogen weight ratio of about 2.8:1 to about 3.3:1 and a nitrogen to oxygen weight ratio of about 1:1 to about 2:1, and
(b) a 3-halo-2-hydroxypropane sulfonate.

4,210,501

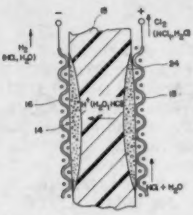
GENERATION OF HALOGENS BY ELECTROLYSIS OF HYDROGEN HALIDES IN A CELL HAVING CATALYTIC ELECTRODES BONDED TO A SOLID POLYMER ELECTROLYTE

Russell M. Dempsey, Hamilton; Thomas G. Coker, Waltham, and Anthony B. La Conti, Lynnfield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Continuation-in-part of Ser. No. 893,090, Apr. 3, 1978, abandoned, which is a continuation of Ser. No. 858,942, Dec. 9, 1977, abandoned. This application Jul. 6, 1978, Ser. No. 922,287

Int. Cl.[2] C25B *1/34, 1/46, 11/02, 13/00*

U.S. Cl. 204—129 22 Claims



1. A process for the continuous production of chlorine from hydrochloric acid which comprises:

(a) continuously providing an aqueous solution of hydrochloric acid to the anode compartment of an electrolytic cell which is separated from the cathode compartment by a cation selective ion exchange membrane, bringing the solution into contact with a catalytic, bonded, graphite anode electrode activated with reduced platinum group metals and oxides thereof bonded to and embedded in the membrane on the side facing the anode compartment said anode being opposite to a catalytic cathode bonded to and embedded in the other side of the membrane forming a unitary electrode-membrane structure whereby catalytic sites in the electrodes are in contact with the ion exchanging sites of the membrane so that electrolysis takes place directly at the membrane-electrode interface,

(b) applying a potential to the electrodes through separate electron conductive current collectors in physical contact with the bonded electromechanically active electrodes to electrolyze the aqueous hydrochloric acid solution to produce chlorine at the anode electrode and hydrogen ions which are transported across said membrane to produce hydrogen at the cathode electrode,

(c) continuously removing chlorine from the anode compartment and hydrogen from the cathode department.

4,210,502

PROCESS FOR RECOVERY OF WASTE H_2SO_4 AND HCL

Morio Watanabe, Amagasaki, and Sanji Nishimura, Kyoto, both of Japan, assignors to Solex Research Corporation of Japan, Osaka, Japan

Continuation of Ser. No. 936,595, Aug. 24, 1978, Pat. No. 4,177,119, which is a continuation of Ser. No. 773,657, Mar. 2, 1977, Pat. No. 4,113,588. This application Mar. 14, 1979, Ser. No. 20,403

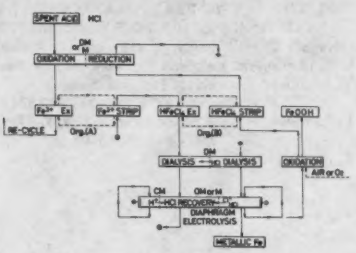
Claims priority, application Japan, Mar. 9, 1976, 51-25223; Mar. 25, 1976, 51-33029; Oct. 4, 1976, 51-118598

Int. Cl. C25B *1/22*

U.S. Cl. 204—151 7 Claims

1. A process for the recovery of acid and metallic iron or iron oxide from an iron chloride complex which has been extracted into an organic solvent (A) consisting of phosphoric acid esters or compounds selected from the group consisting of primary, secondary, tertiary, and quaternary amines together with a petroleum hydrocarbon as a solvent comprising:

(1) stripping the extract by contacting it with the catholyte from the electrolysis of step (2) hereof to regenerate solvent (A) and produce a first aqueous solution; and



(2) subjecting said first solution to a diaphragm electrolysis to recover Cl^- ions as HCl and Fe ions as metallic iron or FeO.

4,210,503

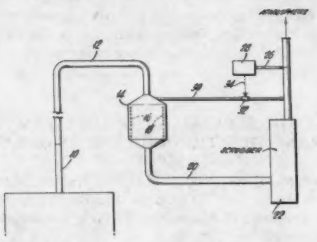
EMISSION CONTROL METHOD AND SYSTEM

Robert G. Confer, Colonia, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1975, Ser. No. 645,810

Int. Cl.[2] B01J *1/00, 1/10*

U.S. Cl. 204—158 R 10 Claims



1. A method for controlling gaseous emissions exhausted to the atmosphere from a process, comprising the steps of:

(a) passing said gaseous emissions through a decomposition chamber having a predetermined volume;

(b) exposing said gaseous emissions in said chamber to ultraviolet radiation of sufficient intensity by passage of said emissions through said ultraviolet radiation to decompose predetermined components of said emissions including vinyl chloride which is decomposed into at least hydrogen chloride, wherein said predetermined volume of said decomposition chamber affords adequate residence time for said gaseous emissions to decompose;

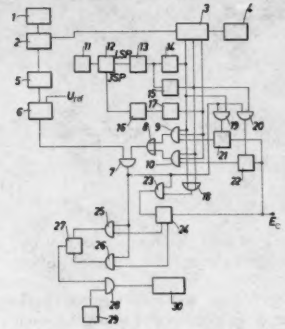
(c) passing the decomposition products including hydrogen chloride from step (b) through an absorption medium wherein said products including at least said hydrogen chloride are absorbed; and

(d) exhausting said gaseous emissions after step (c) to the atmosphere with an acceptable level of vinyl chloride contained therein.

4,210,504
METHOD FOR MEASURING THE ELECTROPHORETIC MOBILITY OF PARTICLES

Klaus Friedel; Ehrhard Dammann; Hans-Joachim Pohl, all of Jena; Wolfgang Schütt, and Hans-Ludwig Jensen, both of Rostock, all of German Democratic Rep., assignors to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Feb. 26, 1978, Ser. No. 940,793
Int. Cl.[2] G01N *27/26, 27/28;* B01K *5/00*
U.S. Cl. 204—180 R 1 Claim



1. Method for measuring the electrophoretic mobility of particles comprising the steps of

applying a voltage to a sample contained in an electrophoreses chamber including the particles to be measured, microscopically observing said sample,

producing an image signal by a vidicon from said sample, said image signal including image synchronization pulses and line synchronization pulses,

converting said image signal into an image of said sample on the screen of a monitor feeding the image signals into a filter line,

subsequent thereto comparing said image signal to an adjustable reference voltage and converting thereby said image signal into a digitalised image signal,

producing a first pulse obtained from the image synchronization pulse by adjustable delay and imaging said first pulse on the screen of said monitor,

producing a second and a third pulse from out of the line synchronization pulse by adjustable delay and imaging said second and third pulse on the screen of the monitor,

logically combining said first, second and third pulse and said digitalised image signal, and obtaining from the logical combination a first and a second signal, said first signal starting a counting operation, said second signal stopping said counting operation.

4,210,505
METHOD AND APPARATUS FOR ELECTRODEPOSITION COATING

Nobuaki Todoroki, Warabi; Junichi Yasukawa, Chigasaki; Norio Kawamura, Kawagoe, and Akio Kasai, Sayama, all of Japan, assignors to Shinto Paint Co., Ltd, Amagasaki; Honda Motor Co., Ltd. and Taikisha Ltd., both of Tokyo, all of, Japan

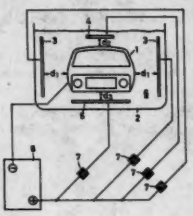
Filed Nov. 14, 1978, Ser. No. 960,558
Int. Cl.[2] C25D *13/06, 13/22*
U.S. Cl. 204—181 C 2 Claims

1. In a method for coating an article by electrodeposition which comprises: immersing the article to be coated in a bath comprising a powder containing electrodeposition coating composition comprising a water thinnable cationic synthetic resin which is a nitrogen-containing basic resin partially neutralized with an acidic compound and a synthetic resin in the form of fine powder which is solid at a room temperature but can melt when heated;

employing as a cathode, said article to be coated;

and applying a voltage between the cathode and plural anodes placed in the bath,

the improvement which comprises positioning the above-



mentioned anodes to face the respective surface of said article to be coated and controlling the amount of coating on the respective surfaces of said article by regulating the quantity of electricity flowing to each anode by means of a breaker connected to each anode so that the current flow to each anode is stopped when the desired quantity of electricity has been passed to the particular anode.

4,210,506
COATING BATH FOR THE CATAPHORETIC COATING OF METALLIC SURFACES

Karl Hoppe, and Udo Strauss, both of Münster, Fed. Rep. of Germany, assignors to BASF Farben & Fasern Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 637,029, Dec. 2, 1975, abandoned. This application Jun. 30, 1978, Ser. No. 921,081
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1974, 2457437
Int. Cl.[2] C25D *13/10*
U.S. Cl. 204—181 C 15 Claims

1. In a process for the production of coatings on metallic iron surfaces by dipping said surfaces into a coating bath in which is maintained a direct current between an anode and a cathode, said metallic iron surfaces being the cathode, said coating bath containing an aqueous solution or an aqueous dispersion of salts of cationic film-forming agents with an acid, the improvement which comprises said cationic film-forming agents selected from the group consisting of:

(1) a reaction product of an epoxy resin with a Mannich base from a condensed phenol, a secondary amine carrying a hydroxyl group and formaldehyde;

(2) reaction products of epoxy resin with a diisocyanate; or

(3) a copylymer wherein the following components have been incorporated by polymerization:

(a) 3–50 percent by weight of at least one mono- or bicyclic compound with a five- to six-membered heterocycle containing 1–3 hetero atoms, one of which is a nitrogen atom, carrying a vinyl group;

(b) 3–30 percent by weight of at least one amide, alkyl amide, hydroxyalkyl amide and oxaalkyl amide of methacrylic acid or acrylic acid; and

(c) 20–94 percent by weight of at least one alkyl ester of methacrylic acid or acrylic acid and/or at least one alkylene benzene;

and said cationic film-forming agents containing metallic ions from metallic salts selected from the group of metallic ions, the potential of which in the electrolytic voltage series of the cations being higher than the potential of the iron metal surfaces, said metallic salts being selected from the group consisting of copper (II) acetate, copper (II) sulfate, copper (II) nitrate, cobalt (II) nitrate, cadmium (II) acetate, zinc (II) acetate, nickel (II) acetate, tin (II) chloride, antimony (III) chloride and chromium (III)

acetate, said metallic ions having an ion concentration from said metallic salts dissolved in said coating composition of 1–2000 parts per million, based on the amount of said cationic film-forming agents present in said coating compositions.

4,210,507

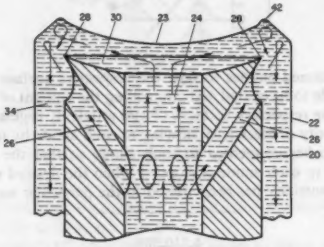
ELECTROCOATING FLOW CONTROL ELECTRODE AND METHOD

John J. Davidson, New Kensington, and David A. Smith, Murrysville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 18, 1978, Ser. No. 943,154

Int. Cl.[2] B05B *5/02*; B05C *7/04*; C25D *13/14, 17/12*

U.S. Cl. 204—181 R **6 Claims**



5. In a method of electrocoating a container by inserting a hollow electrically conductive probe into an inverted container, flowing a primary supply of coating material through said probe to flood the container in a transient bath of electrocoating material, and impressing an electrical potential between the container and the probe to electrocoat the interior of the container, wherein the improvement comprises:

establishing a secondary flow of coating material in the container in a direction substantially opposite to the primary flow by flowing such material from the periphery of said probe toward the container end wall to retard the flow of primary coating material from within the container and to increase the turbulence of flow while maintaining coating material in continuous contact with the container interior to facilitate electrocoating.

4,210,508

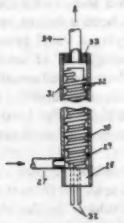
ELECTROLYTIC HYGROMETER IMPROVEMENT

Gustav Bergson, Cedarbrook Hill Apts., Apt. B-117, Wyncote, Pa. 19095

Filed Dec. 15, 1975, Ser. No. 640,818

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 W **6 Claims**



1. An electrolytic cell comprising an insulating outer casing and within that casing an inner element having a helical pair of wires of different material which are spaced from each other but in contact with a hygroscopic material which is electrically conducting only when wet, one of the wires being an anode selected from the class consisting of platinum and rhodium and the other being a cathode of tantalum.

4,210,509

OXYGEN SENSOR

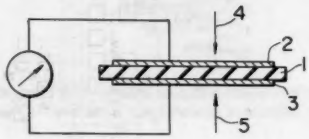
Hidehito Obayashi, Tokyo, and Hiroshi Okamoto, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,129

Claims priority, application Japan, Sep. 2, 1977, 52-104966

Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S **6 Claims**



1. An oxygen sensor comprising an oxygen ion conductive solid metal oxide electrolyte having two different surfaces and an electrode formed on each of the two different surfaces of the solid electrolyte, said solid electrolyte comprising means for generating an electromotive force between said two electrodes whereby the oxygen concentration in a gas to be tested is determined from a value of the electromotive force generated between said two electrodes when the gas to be tested is caused to fall in contact with one of said two surfaces of the solid electrolyte and a standard gas having a known oxygen concentration is caused to fall in contact with the other surface of the solid electrolyte, said solid electrolyte containing fluorine at least in the surface region on the side to be contacted with the gas to be tested, the concentration of fluorine in the surface region being between 0.04 and 0.8 weight percent.

4,210,510

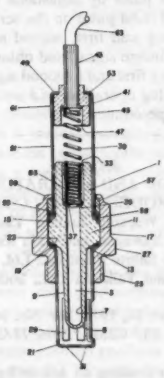
GAS SENSOR WITH CLOSELY WOUND TERMINATION SPRINGS

Donald A. Grimes, Findlay, Ohio, assignor to Bendix Autolite Corporation, Fostoria, Ohio

Filed Jul. 25, 1979, Ser. No. 60,448

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 S **7 Claims**



1. An electrochemical gas sensor comprising:

An ion conductive solid electrolyte sensing element in the form of a tube closed at one end and open at the other end,

a first electrical conductor on the interior surface of said sensing element,

a second electrical conductor on the exterior surface of said sensing element,

a tubular sleeve fitted over and extending beyond the open end of the sensing element and secured thereto,

an insulator axially retained by said sleeve in spaced relation to said open end of the sensing element,

an elongated electrical terminal retained in axial alignment with said sleeve by said insulator and electrically insulated from said sleeve thereby, said terminal extending through said insulator, and

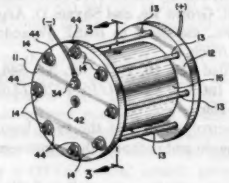
an electrically conductive, helical compression spring extending axially through said sleeve and compressed between said terminal and said sensing element, said spring forming a portion of a series electrical circuit between the first electrical conductor on the interior surface of said sensing element and said terminal; said spring having a tightly wound portion adjacent the end of the spring exposed to temperatures which would cause open coils of the spring to relax and having a compressed length sufficient to maintain at least a preselected force against the terminal and the sensing element over the range of operating temperatures to which the sensor components are exposed.

4,210,511

ELECTROLYZER APPARATUS AND ELECTRODE STRUCTURE THEREFOR

Barrie C. Campbell, Payson, and Harold M. Simons, Orem, both of Utah, assignors to Billings Energy Corporation, Provo, Utah

Filed Mar. 8, 1979, Ser. No. 17,681
Int. Cl.[2] C25B *9/00, 11/03, 11/04*
U.S. Cl. 204—256 **21 Claims**



1. An electrode structure for electrolysis apparatus in which the cathode and anode are disposed, respectively, on either side of and in contact with a solid polymer electrolyte membrane, said electrode structure comprising:

a cathode plate composed of an electrically conductive material which has been formed so as to be porous, whereby the cathode plate is capable of being permeated by a liquid such as water;

a first annular sealing ring circumscribing the perimeter of the cathode plate;

a flat, retainer ring having substantially the same thickness as the thickness of said cathode plate, said flat ring circumscribing the perimeter of said first sealing ring;

a solid polymer electrolyte membrane one side of which is disposed in contact with the one side of said cathode plate, with said membrane extending outwardly beyond the perimeter of said cathode and beyond said first sealing ring, so that the perimeter of the membrane is substantially coterminous with the perimeter of said flat ring;

an anode plate composed of a porous, electrically conductive material, said anode plate having one side thereof disposed in contact with the other side of said membrane, with the perimeter of said anode plate being substantially coterminous with the perimeter of said membrane;

an elongate flow passage extending through said cell structure from one end thereof to the other, said elongate passage comprising concentrically aligned bores through the cathode plate, membrane, and anode plate, with the bore in said anode having a larger diameter than the bores in said membrane which is in contact with the side of said anode, so as to form an indented annular groove around the flow passage;

a second annular sealing ring positioned within said annular groove in the flow passage;

means for securing the cathode plate, membrane, and anode plate in firm, side-by-side, series engagement;

means for applying a liquid to the porous anode plate to flow therethrough;

wherein said liquid flowing through said porous anode wets the membrane, products produced at the interface of the membrane and anode diffuse through the porous anode and are carried away with the liquid, and products produced at the interface of the membrane and the cathode diffuse through the porous cathode to said flow passage, and

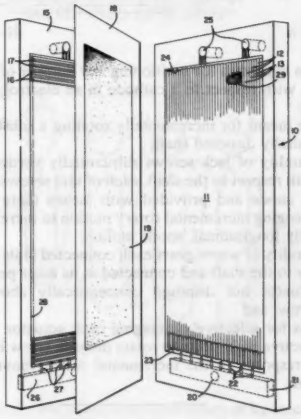
means for applying a D.C. current to the cathode and anode.

4,210,512

ELECTROLYSIS CELL WITH CONTROLLED ANOLYTE FLOW DISTRIBUTION

Richard J. Lawrance, Hampstead, N.H., and John H. Russell, Reading, Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Jan. 8, 1979, Ser. No. 1,879
Int. Cl.[2] C25B *9/00, 9/04;* **H01B** *1/04;* **H01M** *2/14*
U.S. Cl. 204—257 **10 Claims**



1. In an electrolytic cell,

(a) an anode compartment,

(b) a cathode compartment, said compartment being separated by an ion permeable, liquid impervious, membrane,

(c) an anode electrode bonded to one side of said membrane,

(d) a cathode electrode bearing against the opposite side of said membrane,

(e) means for establishing an electrical potential between the anode and cathode electrode, said means comprising a conductive member contacting said cathode and a plurality of spaced, elongated anode conductors contacting said anode defining a plurality of fluid transporting channels for movement of anolyte and gaseous electrolysis product, therealong,

(f) means communicating with each of said channels to introduce anolyte to the inlet portion of each of said channels,

(g) means for providing controlled anolyte distribution across the surface of said anode and along each of said individual fluid transporting channels including means for preventing gaseous electrolysis products from blocking

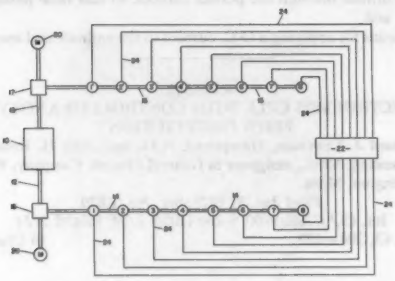
the inlet of any of the individual ones of said channels by introducing a predetermined pressure drop at the inlet thereby maintaining pressure at the inlet of such individual channel higher than the pressure along the remaining length of each such individual channels.

4,210,513

PNEUMATIC ANODE POSITIONING SYSTEM

Thomas A. Mutschler, and Gary J. Zimmerman, both of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 2, 1978, Ser. No. 957,302
Int. Cl.[2] C25C *3/10, 3/20*
U.S. Cl. 204—225 **6 Claims**



1. An apparatus for positioning any number of a plurality of anodes with respect to a cathode in an electrolytic cell comprising:

drive means for incrementally rotating a substantially horizontally disposed shaft;

a plurality of jack screws substantially vertically disposed with respect to the shaft, each of said screws connected to an anode and provided with means there between for changing incremental rotary motion to incremental, vertically longitudinal, anode motion;

a plurality of worm gears each connected at its outer periphery to the shaft and connected at its inner periphery to an actuator nut disposed concentrically about said jack screw; and

means for selectively engaging each actuator nut to its respective jack screw to rotate the jack screw incrementally in response to the incremental rotary movement of the shaft.

4,210,514

PROCESS FOR REDUCING THE MAGNETIC DISTURBANCES IN SERIES OF HIGH-INTENSITY ELECTROLYSIS TANKS

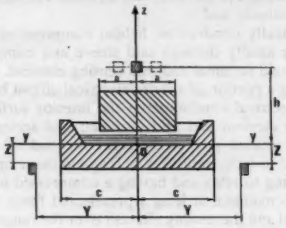
Paul Morel, Le Vestinet, and Jean-Pierre Dugois, Ste. Jean de-Maurienne, both of France, assignors to Aluminum Pechiney, Lyons, France

Filed Jan. 26, 1979, Ser. No. 6,674
Claims priority, application France, Feb. 8, 1978, 78 04193
Int. Cl.[2] C25C *3/06, 3/08*
U.S. Cl. 204—243 M **5 Claims**

1. A process for reducing magnetic disturbances in series of electrolysis tanks, operating at high current strength, for the production of aluminium, the tanks being disposed lengthwise, each tank being supplied with current from the preceding tank both by way of the upstream end at a fraction α of the current strength, and by way of at least one other point disposed between the upstream end and the downstream end inclusive, with a fraction $(1-\alpha)$ of the current strength, characterised in that the horizontal longitudinal component B_y of the magnetic field at the centre of the tank is nullified and that the vertical component B_z of the magnetic field is made anti-symmetric with respect to the axis Oy by disposing the negative conductors in such a way that they are parallel to the axis Ox and pass substantially through the points of co-ordinates Y and Z satisfying the two following relationships:

$$Y^2+Z^2+\mu Z=0$$

$$(\mu^2\gamma+4a^2\gamma-2)\,Z^2-\mu\,(1-2a^2\gamma)\,Z+a^2\,(\gamma a^2-1)=0$$



in which μ and γ are coefficients which are independent of strength and which depend solely on the half-width 'a' of the anodic system, the height 'h' of the cross member above the cathodic reference plane xOy, and the fraction α of the current strength which supplies the upstream end of each tank.

4,210,515

THERMOPLASTIC FIBERS AS SEPARATOR OR DIAPHRAGM IN ELECTROCHEMICAL CELLS

Arvind S. Patil, Grosse Ile, and Shyam D. Argade, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 10, 1975, Ser. No. 548,684
Int. Cl.[2] C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—266 **15 Claims**

1. In an electrolytic cell of the type having a diaphragm between the anode and cathode, the improvement which comprises:

a diaphragm consisting essentially of discrete fibers of a self-bonding thermoplastic material, the fibers having a diameter of between 0.05 and 40 microns, each of the fibers containing from about 0.01 to about ten percent, by weight, based on the weight of the fibers, of a surfactant.

4,210,516

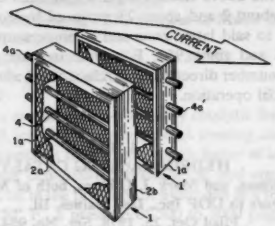
ELECTRODE ELEMENT FOR MONOPOLAR ELECTROLYSIS CELLS

Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,984
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821984
Int. Cl.[2] C25B *11/03, 11/02, 9/04*
U.S. Cl. 204—284 **30 Claims**

1. An improved electrode element for monopolar electrolysis cells comprising, in combination, an electrode frame having electrical current connections, a pair of opposed electrode surface substantially parallel and spaced apart from one another, said electrode surfaces being electrically fastened to said electrode frame, and at least one electrode rod connected in electrically conductive fashion to a side portion of said electrode frame, said rod extending through the space between said opposed electrode surfaces and being substantially parallel to said electrode surfaces, the diameter of said rod being smaller

than the distance between said opposed electrode surfaces, said electrode rod having conductive members distributed over the



length thereof and connected in electrically conductive fashion with both the electrode surfaces and the electrode rod.

4,210,517

PREPARATION OF CARBONACEOUS PRODUCTS

Hisashi Murakami, Tokyo; Toshikatsu Ohtsubo, Kamishirakawa; Kenji Fukuda, Omuta, and Noriaki Ohnishi, Ogawa, all of Japan, assignors to Mitsui Mining Co. Ltd. and Mitsui Coke Co. Ltd., both of Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,070

Claims priority, application Japan, Oct. 31, 1977, 52-129709; Oct. 31, 1977, 52-129710; Oct. 31, 1977, 52-129711; Oct. 31, 1977, 52-129712; Oct. 31, 1977, 52-129713

Int. Cl.[2] C10G *1/00, 1/06;* **C10B** *57/04;* **C10G** *9/14*

U.S. Cl. 208—8 LE **16 Claims**

1. In a process for the preparation of a green coke having a structure selected from the group consisting of needle-like, coarse-mosaic, mosaic, fine mosaic and glassy, wherein coal is dissolved in a hydrocarbon solvent to form a solution of coal having a predetermined degree of depolymerization, residual insoluble components are separated from said solution, said solvent is removed therefrom to yield a solvent purified coal useful as a raw material for said green coke, and said solvent purified coal is coked to form said green coke, the improvement wherein said solvent purified coal is selected from the group consisting of a first type of solvent purified coal useful as a raw material for structurally needle-like green coke and characterized by a (N+O+S)/C atomic ratio of less than 0.0445, a second type of solvent purified coal useful as a raw material for structurally coarse mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0445 to but excluding 0.0516, a third type of solvent purified coal useful as a raw material for structurally mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0516 to but excluding 0.0584, a fourth type of solvent purified coal useful as a raw material for structurally fine mosaic green coke and characterized by a (N+O+S)/C atomic ratio of from 0.0584 to but excluding 0.0645, and a fifth type of solvent purified coal useful as a raw material for structurally glassy green coke and characterized by a (N+O+S)/C atomic ratio equal to or greater than 0.0645.

4,210,518

HYDROGEN-DONOR COAL LIQUEFACTION PROCESS

Edward L. Wilson, Jr., and Willard N. Mitchell, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 744,845, Jan. 24, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,925

Int. Cl.[2] C10G *1/06*

U.S. Cl. 208—10 **17 Claims**

1. A hydrogen-donor liquefaction process for converting coal or similar carbonaceous solids into lower molecular weight liquid hydrocarbons which comprises:

(a) contacting said carbonaceous solids with a hydrogen-donor solvent and molecular hydrogen at a temperature in the range between about 775° F. and about 950° F. in a liquefaction zone operated such that the temperature remains substantially constant throughout said zone and wherein said carbonaceous solids are converted into lower molecular weight liquid hydrocarbons to form a liquefaction effluent, said hydrogen-donor solvent having a donatable hydrogen concentration higher than the thermodynamic equilibrium concentration at the temperature in said liquefaction zone when said solvent enters said zone;

(b) maintaining a higher concentration of catalytic material that is active in promoting the hydrogenation of aromatics to form hydroaromatics in said liquefaction zone near said outlet of said zone than near said inlet of said zone; and

(c) recovering liquid hydrocarbonaceous products from said liquefaction effluent.

4,210,519

PROCESS AND APPARATUS FOR HYDROCARBON CONVERSION

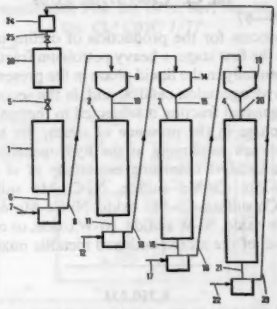
Roger Boret, Le Pecq; Charles Bronner, Chatou; Roland Huin, Montesson-la-Borde, and Andre Vidal, Le Vesinet, all of France, assignors to Intitut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 741,744, Nov. 15, 1976, Pat. No. 4,133,743, Ser. No. 589,987, Jun. 24, 1975, abandoned, and Ser. No. 305,797, Nov. 13, 1972, abandoned. This application Dec. 6, 1978, Ser. No. 966,995

Claims priority, application France, Nov. 16, 1971, 71.41069; Feb. 7, 1972, 72.04055; Mar. 13, 1972, 72.08731

Int. Cl.[2] C10G *13/16, 35/12*

U.S. Cl. 208—49 **6 Claims**



1. A process for the continuous conversion of hydrocarbons, in the presence of a granular catalyst containing a carrier and at least one metal selected from the group consisting of metals from groups VI a, VII a and VIII of the periodic classification of the elements, comprising circulating a charge formed of hydrogen and hydrocarbons through a reaction space comprising at least two elementary catalytic zones, connected in series, substantially vertical and placed side by side, each of them being of the moving bed type, the charge circulating successively through each zone and the catalyst also passing successively through each zone and moving continuously downwardly therethrough, continuously withdrawing the catalyst from the bottom of the last catalytic zone, passing resultant withdrawn catalyst to an accumulator, and from the accumulator sending the catalyst to a fixed bed regeneration zone, isolating the fixed bed regeneration zone from the process during regeneration, the catalyst in the regeneration zone where, forming a fixed bed, it is successively subjected in the form of said fixed bed (a) to a combustion by means of a gas containing molecular oxygen whose oxygen content by volume is from 0.01 to 1%, (b) to an oxychlorination by means of a gas containing molecular oxygen whose oxygen content by volume is from 1 to 3% and simultaneously by means of at least one alkyl

halide, and (c) to a final oxidation treatment by means of an oxygen-containing gas whose oxygen content by volume is from 3 to 20%, passing resultant regenerated catalyst to a reducing zone and from which the reduced catalyst is progressively reintroduced into the upper part of the first catalytic zone of the reaction space so as to maintain a substantially constant high level of activity in each point of the catalytic zones, and wherein said granular catalyst, progressively withdrawn from one reaction space, is introduced in a lifting pot from where it is sent to a regeneration zone or to another reaction space, by lift means whose driving fluid consists essentially of recycle hydrogen, introduced through the lifting pot, in which the hydrogen stream, before being introduced into the lifting pot is subdivided in two flows defined as "primary hydrogen" and "secondary hydrogen", the "primary hydrogen" being introduced permenently through the bottom of the lifting pot, the "secondary hydrogen" supplied intermittently to the raising pot for insuring the catalyst raising, being introduced through a duct opening into the lateral wall of the lifting pot, and in the lower portion of said lateral wall, the so-formed system acting as a valve for causing the catalyst circulation and interrupting the same.

4,210,520

UNSUPPORTED CATALYSTS IN THE PRODUCTION OF OLEFINS

Hans J. Wernicke, Wolfratshausen, and Walter Kreuter, Penzberg, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,485

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721504

Int. Cl.[2] C10G *37/06, 23/02*

U.S. Cl. 208—57 **11 Claims**

9. In a process for the production of olefins in two stages wherein, in the first stage, a heavy petroleum fraction is hydrogenated essentially in the liquid phase in the presence of hydrogen and a hydrogenation catalyst and, in the second stage, the thus-hydrogenated fraction is subjected to thermal cracking in the vapor phase in the presence of steam, the improvement which comprises employing as the hydrogenation catalyst a support-free catalyst consisting essentially of at least one of Co-Mo, Ni-Mo, Co-Mo sulfide, Ni-Co-Mo sulfide, Ni-Mo sulfide, Ni-Co sulfide, Co-Mo oxide, Ni-Co-Mo oxide, Ni-Mo oxide, Ni-Co oxide, Ni-W sulfide, Ni-W oxide, or organometallic complexes of the aforementioned metallic mixtures.

4,210,521

CATALYTIC UPGRADING OF REFRACTORY HYDROCARBON STOCKS

Robert L. Gorring, Washington Crossing, Pa., and Robert L. Smith, Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 793,706, May 4, 1977, Pat. No. 4,153,540. This application May 2, 1979, Ser. No. 35,153

Int. Cl.[2] C10G *23/04*

U.S. Cl. 208—89 **11 Claims**

1. A dual bed process for upgrading a refractory hydrocarbon feed, characterized by a Bromine No. greater than about 10 and an aromatics content of at least about 40 weight percent, which comprises contacting a stream of said feed initially in a hydrotreating zone containing a bed of hydrotreating catalyst under reaction conditions which include a pressure within the range of about 100 to about 1800 psig, a temperature between about 550° F. and about 850° F. in the presence of between about 2.4 and about 24 moles of hydrogen/mole of hydrocarbon charge to convert sulfur and nitrogen derivatives of hydrocarbon to hydrogen sulfide and ammonia; passing the entire effluent from said hydrotreating zone to a hydrocracking zone containing a bed of hydrocracking catalyst comprising a crystalline aluminosilicate zeolite characterized by a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12 in combination with a metal component exhibiting hydrogenation/dehydrogenation activity under reaction conditions which include a pressure within the above stated range, a hydrogen concentration between about 2 and about 23 moles of hydrogen per mole of charge to said latter zone and a temperature between about 650° F. and about 950° F. and recovering gasoline of high octane number directly as a product of the aforenoted dual bed sequential operation.

4,210,522

HYDROCRACKING CATALYST

Lee Hilfman, and Mark J. O'Hara, both of Mt. Prospect, Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 25, 1978, Ser. No. 954,685

Int. Cl.[2] C10G *13/02, 23/04;* **B01J** *23/64*

U.S. Cl. 208—111 **6 Claims**

1. A process for the conversion of heavy hydrocarbon oil boiling above about 650° F. into lower boiling hydrocarbons, which comprises hydrocracking the heavy oil in admixture with hydrogen and in contact with a catalyst comprising a rare earth exchange metal component and a platinum group metal component supported on a mixture of Ziegler alumina and a zeolite.

4,210,523

HYDROCARBON CONVERSION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE CONTAINING TWO DIFFERENT TYPES OF RHENIUM SITES

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 888,708, Mar. 20, 1978, Pat. No. 4,149,962. This application Feb. 21, 1979, Ser. No. 13,491

Int. Cl.[2] C10G *35/08*

U.S. Cl. 208—139 **23 Claims**

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a reduced combination of a catalytically effective amount of an adsorbed rhenium-oxygen complex with a porous carrier material containing catalytically effective amounts of a rhenium component other than that derived from said rhenium-oxygen complex and of a platinum group component wherein said platinum group component is uniformly dispersed in the carrier material and is maintained in the elemental metallic state during adsorption and reduction of the rhenium-oxygen complex and wherein at least a portion of the rhenium-oxygen complex is adsorbed on the surface of the platinum group component prior to the reduction of the rhenium-oxygen complex.

4,210,520

HYDROCARBON CONVERSION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE CONTAINING TWO DIFFERENT TYPES OF RHENIUM SITES

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Mar. 7, 1979, Ser. No. 18,811

Int. Cl.[2] C10G *35/08*

U.S. Cl. 208—139 **21 Claims**

1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon with a catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a catalytically effective amount of a non-carbonyl derived rhenium component and a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental state during the incorporation of said rhenium carbonyl component.

4,210,525
HYDRODENITROGENATION OF DEMETALLIZED RESIDUAL OIL

Alan W. Peters, Moorestown, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 24, 1979, Ser. No. 32,827
Int. Cl.² C10G *23/02*
U.S. Cl. 208—212 **5 Claims**

1. A process for preparing a high quality catalytic feedstock from a residual oil, which process comprises treating said oil to reduce the metals content thereof to a metals factor of less than 50 thereby forming demetallized residual oil, and contacting said demetallized oil in the presence of hydrogen at a temperature of 600° to 850° F., a pressure of 500 to 3000 psig, and a liquid hourly space velocity of 0.1 to 10.0 with a denitrogenation catalyst comprising the oxides or sulfides of a group VIB metal and an iron group metal on an acidic porous refractory oxide, said catalyst having at least 80% of its pore volume in pores up to 50 Angstroms diameter.

4,210,526
DESULFURIZING FOSSIL FUELS

Rollan Swanson, 220 California Ave., Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 898,206, Apr. 20, 1978, Pat. No. 4,160,721. This application Jun. 16, 1978, Ser. No. 915,905
Int. Cl.² C10G *19/00, 34/00;* C01B *17/00, 17/16*
U.S. Cl. 208—230 **9 Claims**

1. In a process wherein petroleum residues are desulfurized by treating with at least 0.25 volume thereof of an alkali metal monosulfide hydrate reagent at a process temperature of between about 120° and 325° C. from about 3 to 60 minutes: separating said residues now having a reduced sulfur content from the corresponding alkali metal polysulfides, the improvement which comprises the steps of:

(a) separating at said process temperature a mixture of unreacted alkali metal monosulfide hydrate and alkali metal polysulfides from said desulfurized residue;

(b) hydrolizing in a closed system said polysulfides by adding to said mixture at said temperature at least one mol of water per mol of hydrate and polysulfide thereby forming steam and hydrogen sulfide;

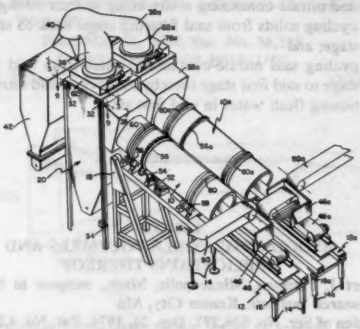
(c) removing said steam and said hydrogen sulfide from said system thereby reducing the water content therein to that of the alkali metal monosulfide hydrate and separating the highest sulfur content polysulfide from the said hydrate.

4,210,527
TWIN AIR CLASSIFIER SYSTEM

Malcolm M. Paterson, Lee, N.H.; William J. Paxson, Cedar Rapids, and Stewart B. Olson, SE. Cedar Rapids, both of Iowa, assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 12, 1979, Ser. No. 29,169
Int. Cl.² B07B *4/06*
U.S. Cl. 209—152 **11 Claims**

1. Resource recovery apparatus comprising the combination of a plenum having two separate materials-receiving chambers in its upper region and a materials-collection chamber in its lower region in direct communication with both of said receiving chambers, a pair of inclined rotary drum classifiers having their upper ends operatively connected with respective receiving chambers, and means for creating air streams through the drums and the respective receiving chambers, said drums being rotatable whereby materials deposited in the drums will be separated therein into heavy components which exit from the lower ends of the drums and light components which are

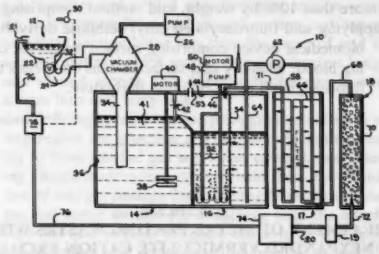


removed by the air streams into the respective receiving compartments and deposited in the common collection chamber.

4,210,528
CLOSED LOOP WASTE TREATMENT AND WATER RECYCLING TOILET SYSTEM

Allan J. Coviello, Ann Arbor, Mich.; Frederick E. Bernardin, Wilmington, Del., and Kathryn R. Kalb, Brighton, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 006,619, Jan. 26, 1979, which is a continuation of Ser. No. 850,559, Nov. 11, 1977, abandoned. This application Feb. 28, 1979, Ser. No. 16,124
Int. Cl.² C02C *1/17*
U.S. Cl. 210—4 **8 Claims**



1. In a multi-stage method for treating toilet waste and recycling treated liquid therefrom, the steps of:

a. receiving said waste at a first stage and flushing said waste from said first stage with flush water containing nitrates thereby to form a liquid mixture of the waste and nitrate-containing flush water,

b. transferring said liquid mixture to a second stage whereby said mixture is agitated and is maintained under anoxic conditions so as to cause denitrification of said liquid mixture and generation of nitrogen gas, said nitrogen gas being vented from said second stage in such manner as to prevent the entry of oxygen into said second stage thereby to assist in maintaining the anoxic conditions in said second stage,

c. transferring liquid from said second stage to a third stage containing biologically active solids and liquid and being maintained under aerobic conditions, air being passed through the mixture in said third stage at a sufficient rate to cause nitrification of nitrogenous compounds in said mixture, thereby to produce nitrates therein, the dissolved oxygen in the mixture in said third stage being greater than 2 mg/l,

d. transferring the nitrate-containing mixture from said third

stage directly to a filtering stage wherein said mixture is filtered to separate nitrate-containing water therein from the solids therein, the concentration of nitrate nitrogen in said nitrate-containing water being at least 50 mg/l,

e. cycling solids from said filtering stage back to said third stage; and

f. cycling said nitrate-containing water from said filtering stage to said first stage thereby to serve as said nitrate-containing flush water in said first stage.

4,210,529

BLOOD COMPATIBLE POLYMERS AND APPLICATIONS THEREOF

Robert J. Petersen, Minneapolis, Minn., assignor to Midwest Research Institute, Kansas City, Mo.

Division of Ser. No. 536,397, Dec. 26, 1974, Pat. No. 4,008,047. This application Feb. 7, 1977, Ser. No. 766,436

Int. Cl.[2] B01D *13/00;* **A61M** *1/03*

U.S. Cl. 210—22 A **7 Claims**

4. A method of using a solid surface comprising a blood compatible fluoroacylated ethyl cellulose derivative having about 4.4 to about 5.5 ethoxide groups per disaccharide unit, whereby essentially all of the pendant methylol groups and more than about 50 mole % of the ring-substituted hydroxyls of said ethyl cellulose derivatives are etherified, said ethyl cellulose derivative containing about 0.5 to about 1.6 ring-substituted $-OCO(CF_2)_mCF_3$ groups per disaccharide unit, wherein m is a number ranging from 1 to 6, said ethyl cellulose derivative containing, at most, trace amounts of residual hydroxyl groups as determined by infrared spectroscopic analysis and having a calculated chamically combined fluorine content of more than 10% by weight, said method comprising:

applying said fluoroacylated ethyl cellulose derivative to a biomedical device comprising surface means for contacting blood, whereby said surface means comprises the said fluoroacylated ethyl cellulose derivative.

4,210,530

TREATMENT OF METAL PLATING WASTES WITH AN UNEXPANDED VERMICULITE CATION EXCHANGE COLUMN

James E. Etzel, Lafayette, Ind., and Vasiliki Keramida, Athens, Greece, assignors to Purdue Research Foundation, Lafayette, Ind.

Filed Feb. 22, 1979, Ser. No. 13,929

Int. Cl.[2] C02B *1/44*

U.S. Cl. 210—38 B **11 Claims**

1. A method for removing multivalent heavy metal ions from metal plating waste effluents to avoid polluting the water supplies, comprising:

passing an effluent containing ion-exchangeable heavy metal ions at a concentration of 200 mg/l or less through a cation exchange column packed with unexpanded vermiculite particles having a cation exchange capacity of at least about 69 meq/100 gm,

whereby the ion-exchangeable multivalent heavy metal ions are exchanged for nonpolluting magnesium ions, the heavy metal ions are retained by the vermiculite lattice, and the treated effluent exiting from said column has a heavy metal ions concentration of 2 mg/l or less, and

discharging from said column a treated waste effluent containing heavy metal ions at concentrations of 2 mg/l or less so as to prevent polluting the water supplies.

4,210,531

PROCESS FOR DEWATERING MINERAL CONCENTRATES

Samuel S. Wang, Cheshire, and Morris E. Lewellyn, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1977, Ser. No. 860,912

Int. Cl.[2] B01D *21/01;* **C02B** *1/20*

U.S. Cl. 210—51 **10 Claims**

1. A process for dewatering mineral concentrates which consists essentially of first mixing with an aqueous slurry of said mineral concentrate an effective amount of a polyacrylamide flocculant; next mixing with the flocculant-treated slurry an effective amount of a combination of an anionic surface active agent composition and a water-insoluble organic liquid selected from aliphatic hydrocarbons, aromatic hydrocarbons, aliphatic alcohols, aromatic alcohols, aliphatic halides, aromatic halides, vegetable oils, and animal oils, said combination comprising from about 5 to about 95 weight percent of anionic surface active agent and, corresponsingly, from about 95 to about 5 weight percent of water-insoluble organic liquid, based on the total weight of surface active agent and organic liquid, said water-insoluble organic liquid being different from any water-insoluble organic liquid present in said anionic surface active agent composition; and thereafter removing water as a liquid from said slurry.

4,210,532

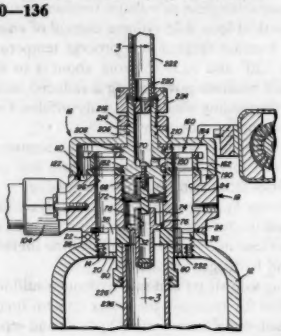
WATER CONDITIONER ROTARY VALVE STRUCTURE

Harvey L. Loke, P.O. Box 128, Wells, Minn. 56097

Filed Sep. 14, 1978, Ser. No. 942,910

Int. Cl.[2] B01D *15/06;* **F16K** *11/02*

U.S. Cl. 210—136 **6 Claims**



1. In combination with a water conditioning container for water conditioning minerals, a rotary valve structure including a valve body having flow passages formed therethrough opening through first and second opposite ends of said body, first and second passage defining end members secured over said first and second ends, respectively, a rotary valve member interposed between said first end member and said first end and journaled from the latter for angular displacement about an axis extending between said ends, said second end being secured in an opening formed in said container and opening into an upper portion of the interior thereof, said body including inlet and outlet ports formed therein as well as a brine port formed therein and said body including means defining a drain port opening outwardly thereof through said first end member, said rotary valve member, said second end member, and said valve body including selectively registrable passages, upon positioning of said rotary valve member in successive first, second and third angularly displaced positions relative to said valve body operative to (1) communicate said inlet port with an upper portion of the interior of said container and a lower portion of the interior of said container with said outlet port,

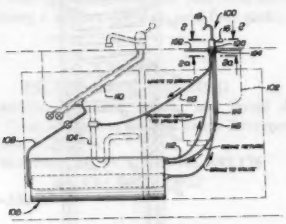
(2) communicate said inlet port with said lower portion of the interior of said container and said upper portion of the interior of said container with said drain port, and (3) communicate said inlet with said upper portion of the interior of said container through a venturi area with which said brine port is communicated and communicate said lower portion of said container with said drain port, said container including an elongated zone of the interior thereof extending along a path extending between the upper and lower portions of said container interior, said selectively registrable passage, when said rotary valve member is in said second position, only, also including means operative to discharge jets of the liquid flowing through said container horizontally laterally outwardly from said path at points spaced therealong and extending in generally the same horizontal direction away from said path.

4,210,533

REMOTE CONTROL VALVE FOR REVERSE OSMOSIS WATER PURIFIER

Jaromir Astl, 626 Circle Dr., East, Solana Beach, Calif. 92075

Filed Jan. 24, 1978, Ser. No. 871,826
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—136 **4 Claims**



1. A remote control valve for a reverse osmosis water purifier which is connected to a source of pressurized feed water and produces purified water and brine from the feed water, the purified water being pressurized by the feed water, the purifier having a purified water outlet, a brine outlet and a brine return inlet, the control valve comprising:

a valve body having a purified water inlet with means for connection to the purified water outlet of the purifier, a brine inlet with means for connection to the purifier brine outlet, a brine return outlet with means for connection to the purifier brine return inlet, and a waste outlet with means for connection to a drain;

a purified water discharge outlet connected directly to the purified water inlet, which has a backflow preventing check valve therein;

said brine inlet being coupled to said brine return outlet;

a brine inlet valve mounted in and normally closing said inlet;

manually operable means for opening said brine inlet valve to direct brine through said brine return outlet to the purifier, so as to pressurize the purified water therein to feed water pressure and deliver the purified water to said discharge outlet;

brine bleed means for metering brine from said brine inlet to said waste outlet when the brine inlet valve is closed;

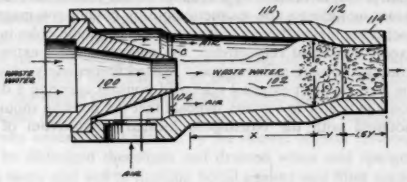
and a purified water bleed outlet between said purified water inlet and said discharge outlet for bleeding excess purified water to said waste outlet.

4,210,534

MULTIPLE STAGE JET NOZZLE AND AERATION SYSTEM

Allen E. Molvar, Barrington, R.I., assignor to Clevepak Corporation, White Plains, N.Y.

Filed May 11, 1979, Ser. No. 38,225
Int. Cl.[2] C02C *1/02*; B01F *3/04*
U.S. Cl. 210—220 **11 Claims**



1. A system for aerating waste water in a body of waste water comprising:

at least one mixing chamber adapted for immersion in said body for providing a waste water passage, including:

an extending chamber,

a liquid passage for guiding waste water flow into said extending chamber, the cross-sectional area of the liquid passage at the entry into said extending chamber being less than the cross-sectional area of said extending chamber at the entry so as to form a step region, and said extending chamber including at least three sections extending from said step region, a first section extending downstream from said step region, a second section extending downstream from said first section and tapered inwardly at a rate greater than any rate of taper of the first section to maintain mixing within said extending chamber and a third non-diverging section extending downstream from said second section, any taper of said third section being less than the taper of said first section, and said third section being at least as long as said second section and directly discharging a mixed stream into said body and,

means defining at least one gas passage terminating at said step region for injecting gas into said extending chamber to form parallel gas and water streams, said extending chamber extending downstream from the termination of said gas passage for confining flow of the parallel gas and water streams for a distance until the interface between said streams becomes unstable in said extending chamber and vortices are tripped to produce gas bubbles which are mixed with the water stream to produce said mixed stream;

means for pumping said waste water through said at least one mixing chamber;

means for mounting said mixing chamber below the surface of said body of water; and

means for supplying an aerating gas to said gas passage for injection into waste water within said mixing chamber.

4,210,535

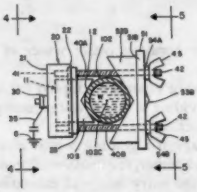
MAGNETIC TREATMENT DEVICES FOR WATER PIPELINES

George Risk, 716 E. 5th St., Kimball, Nebr. 69145

Filed Dec. 4, 1978, Ser. No. 965,941
Int. Cl.[2] B01D *35/06*
U.S. Cl. 210—222 **3 Claims**

1. In removable combination with a water pipeline extending from a reservoir of iod-laden water and terminating remotely downstream therefrom at the water consumer's outlet-valve, a magnetic treatment device removably securably associated with a selected pipe-segment of the pipeline and which is located nearer to the outlet-valve than to the upstream water reservoir and said selected pipe-segment surrounding a central-

axis along which the water concentrically flows, said removably secured treatment device providing magnetic flux intersecting said central-axis whereby the water flowing therethrough has its ionic characteristics altered thereat and discernible to the water consumer at the outlet-valve, said magnetic treatment device comprising at least a pair of magnetic poles one of which is a North-pole and the other of which is a South-pole, said poles being in a fixedly separated relationship with the gap therebetween being directionally parallel said central-axis as defined by a suitable holder means, said holder means including a non-magnetic housing having non-magnetic anchoring means therein to maintain the magnetic poles in said fixedly separated relationship, the magnetic poles extending from the housing and terminally located immediately adjacent the pipe-segment external side, said housing carrying a directional indicator to visually indicate that the housing should be mounted with the North-pole located downstream of the



South-pole, said housing being maintained adjacent the pipe-segment with suitable mounting means comprising a pair of parallel and laterally separated threaded bolts rigidly extending from the housing and passing through a structurally reinforced portion of the web of a laterally extending bridger member located opposite the magnetic poles and comprising the following parts in structurally continuous relationship:

A. a laterally extending web,

B. a pair of laterally extending identical dogs which are separated directionally parallel the central-axis and extending transversely directionally from the web with inwardly recessed terminii abutting the pipe-segment, and

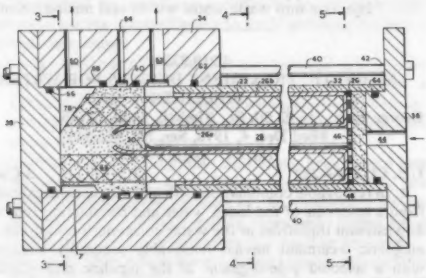
C. a pair of laterally extending strengtheing ribs respectively extending transversely from the web and directionally opposite the dogs' protuberance of the web juncture between the dogs and the ribs; and wing nuts threadedly engaged with the bolts to draw the bridger dogs tightly against the intervening pipe-segment.

4,210,536

HOLLOW FILAMENT SEPARATORY MODULE

Myron J. Coplan, Natick, and Robert E. Sebring, Westwood, both of Mass., assignors to Albany International Corporation, Menands, N.Y.

Filed Sep. 19, 1978, Ser. No. 943,793
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—321 R **7 Claims**



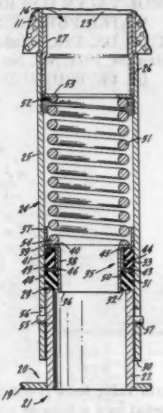
1. A hollow filament separatory module including in combination an annulus of filaments consisting of a plurality of layers of semi-permeable helically wound hollow filaments, open ends of said filaments, main portions of said filaments, a pressurized zone of said module, first flow means in said pressurized zone for flowing fluid in contact with the outer surfaces of said filaments at the main portions thereof, a collection zone of said module, second flow means in said collection zone for flowing fluid within said hollow filaments and through the open ends thereof, an intermediate zone between said pressurized zone and said collection zone, first and second sealing means defining said intermediate zone and separating said pressurized zone and said collection zone and weep hole port means between said first and second sealing means.

4,210,537

LIQUID TREATMENT APPARATUS

Donald J. Butterworth, Stirling, and Leo F. Ryan, Bridgewater, both of N.J., assignors to Ecodyne Corporation, Lincolnshire, Ill.

Filed Sep. 18, 1978, Ser. No. 943,404
Int. Cl.[2] B01D *27/00, 29/00*
U.S. Cl. 210—323 T **8 Claims**



1. A liquid filter comprising:

A. a pressurized vessel having an untreated liquid inlet and a treated liquid outlet;

B. a tube sheet spanning a portion of said vessel and defining an untreated liquid chamber communicating with said inlet and a treated liquid chamber communicating with said outlet;

C. a plurality of tubes attached to said tube sheet and projecting into said untreated liquid chamber, the inside of said tubes communicating with said treated liquid chamber through said tube sheet;

D. a plurality of elongated porous filter elements, each having a closed end and an open end, each of said open ends being axially aligned with one of said tubes and communicating with said treated liquid chamber through its associated tube;

E. means for releasably connecting said filter elements to said tubes; and

F. sliding seals for preventing leakage from said untreated liquid chamber between said filter elements and tubes into said treated liquid chamber, each such seal comprising:

1. an open-ended central support cylinder having one end attached to the open end of one of said filter elements, the interior of said support cylinder communicating with the interior of such filter element;

2. the terminal end of one of said tubes extending into the other end of said support cylinder;

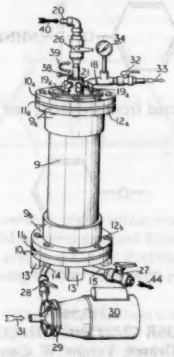
3. a first annular gasket within said support cylinder, one surface of said first gasket sealingly engaging said terminal end of said tube;
4. a second annular gasket within said support cylinder, one surface of said second gasket sealingly engaging the inside wall of said support cylinder between said first gasket and said open end of said filter element;
5. a movable hollow seal cage within said support cylinder comprising:
   a. a first member having an axially extending annular rim spaced from the inside of said support cylinder, a wall defining a first shoulder which faces said open end of said filter element and a second shoulder which faces said terminal end of said tube, said second gasket means bearing against said second shoulder, and said first gasket means being retained by said rim;
   b. a second member having an axially extending sleeve spaced from the inside of said support cylinder, said sleeve telescoping over and tightly engaging said rim of said first member, one end of said sleeve abutting said second shoulder and the other end of said sleeve terminating short of the terminal end of said second rim, a flange having one end connected to said other end of said sleeve, said flange defining a third shoulder which faces said open end of said filter element and a fourth shoulder which faces said terminal end of said tube, said second gasket means being retained by said sleeve and bearing against said third shoulder, and said first gasket means bearing against said fourth shoulder; and
6. spring means within said support cylinder bearing against said filter element and said first shoulder for maintaining a sealing force on said first gasket.

4,210,538

FILTER BACK-WASHING

Robert M. Tantillo, Brockton, Mass., and David A. Niven, Waterbury, Conn., assignors to Bob Baker Enterprises, Inc., Melvin Village, N.H.

Filed Mar. 31, 1978, Ser. No. 892,176
Int. Cl.[2] B01D *35/22*
U.S. Cl. 210—333 A **9 Claims**



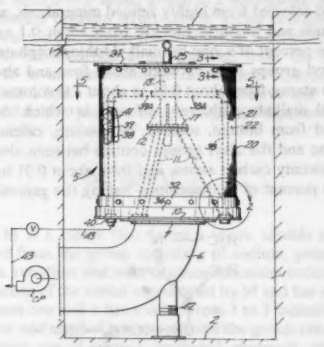
5. Filtration apparatus which comprises, in combination, a liquid-tight substantially cylindrical tank, partitioning means within said tank dividing it into two axially-spaced chambers, said partitioning means including a cluster of substantially rigid laterally-spaced tubular members extending into one of the chambers and having relatively large openings through the side walls thereof, each of said tubular members supporting a sleeve of flexible porous filter material in a surrounding closely-mated relationship therewith wherein said porous filter material extends across and closes said openings, means for introducing into said one of said chambers from outside said tank a liquid from which suspended contaminants are to be filtered, means for releasing from said tanks filtered liquid which accumulates in the other of said chambers, a plurality of sparger pipes extending one each coaxially into said tubular members, each having an inlet and a plurality of minute spray-forming orifices therethrough distributed along the portions thereof within said members and oriented to direct jets of liquid through said openings and directly onto said filter material which extends across said openings, means for interrupting the introduction of liquid into said one of said chambers and the release of filtered liquid from the other of said chambers, means for introducing pressurized flushing liquid from a supply main outside said tank into an inlet of each of said sparger pipes, and means for draining flushing liquid and filtered contaminants entrained therein from said one of said chambers, whereby contaminants filtered by the sleeves of filter material may be dislodged therefrom and drained when said sparger pipes spray said jets of flushing liquid against said filter material through said openings through side walls of said tubular members while preventing said contaminants from entering said other of said chambers.

4,210,539

WATER SCREEN

Samir S. Shiban, 870 Armstrong, Eugene, Oreg. 97404

Filed Oct. 10, 1978, Ser. No. 949,693
Int. Cl.[2] B01D *33/06*
U.S. Cl. 210—391 **10 Claims**



1. A water screen for total submergence in a body of water acted on by atmospheric pressure for removal of suspended matter from an outflow, said screen comprising,
   a conduit in communication with the intake side of a pump and having an inlet end for submerged disposition in the body of water and through which a screened outflow passes,
   a support structure including a base plate in place on said inlet end of the conduit,
   an upright drum shaped screen structure for submerged disposition in the body of water and rotatably supported by said support structure, said screen structure closed at its upper end,
   a backwash system within said screen structure and comprising conduits receiving a pressurized flow of water and having orifices discharging a backwash flow against the drum interior in a chordal direction with the backwash flow additionally imparting rotation to said screen, and
   said screen structure having a substantial pressure drop thereacross by reason of both atmospheric and hydrostatic pressure being applied to the submerged screen structure exterior.

4,210,540
IMPROVED FILTER TUBE

Kenneth A. Perrotta, Methuen, Mass., assignor to Whatman Reeve Angel Limited, Maidstone, England

Division of Ser. No. 803,026, Jun. 3, 1977, Pat. No. 4,102,785.
This application Aug. 7, 1978, Ser. No. 931,864
Int. Cl.[2] B01D *29/10*
U.S. Cl. 210—497 R **12 Claims**

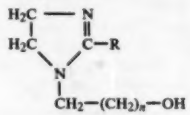
1. An improved filter tube, which filter tube comprises interrelated, randomly disposed, inorganic fibers having interstices therebetween to define the porosity of the filter tube, the fibers having a diameter ranging from about 0.01 to about 10 microns, and bonded at the junction of the fiber crossover points in the filter tube, with a bonding agent consisting essentially of a fused, thermoplastic, fluorocarbon polymer, the bonding agent generally uniformly distributed throughout the thickness of the filter tube wall and present in an amount of from about 3% to 40% by weight of the tube, the fibers interrelated to form a porous, self-supporting filter tube.

4,210,541
STABILIZED HYDRAULIC FLUID COMPOSITION

James T. Mann, Plum Borough, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 27, 1978, Ser. No. 963,933
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E **5 Claims**

1. A hydraulic fluid stabilized against thermal degradation comprising a base oil having a 100° F. (37.8° C.) viscosity of between about 100 SUS (20.6 cs.) and about 1,000 SUS (215 cs.) and selected from highly refined mineral oils, alpha-olefin oligomers and mixtures thereof; from about 0.1 to about 2.0 volume percent of a zinc bis(dialkyldithiophosphate) in which the alkyl groups have between about four and about twelve carbon atoms; from about 0.01 to about 1.0 volume percent of a metal dialkylnaphthalene sulfonate in which the metal is selected from lithium, sodium, magnesium, calcium, barium and zinc and the alkyl groups contain between about six and about twenty carbon atoms; and from about 0.01 to about 1.0 weight percent of a composition having the general formula



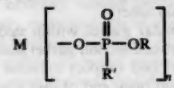
where n is an integer selected from 0, 1, 2 and 3 and R is selected from alkyl, alkenyl, alkadienyl, alkatrienyl, and mixtures thereof having from about ten to about thirty carbon atoms.

4,210,542
MULTICOMPONENT STABILIZED HYDRAULIC FLUID

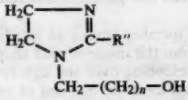
James T. Mann, Plum Borough, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 1, 1978, Ser. No. 965,336
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—32.7 E **5 Claims**

1. A hydraulic fluid stabilized against thermal degradation comprising a base oil having a 100° F. (37.8° C.) viscosity of between about 100 SUS (20.6 cs.) and about 1,000 SUS (215 cs.) and selected from highly refined mineral oils, alpha-olefin oligomers and mixtures thereof; from about 0.1 to about 2.0 volume percent of one or more zinc bis(dialkyldithiophosphate)s in which the alkyl groups have between about four and about twelve carbon atoms; from about 0.01 to about one volume percent of an alkali metal or alkaline earth metal phosphonate having the general formula



in which M is an alkali metal or alkaline earth metal, n is the valence of the metal, R is lower alkyl having one to about four carbon atoms and R′ is higher alkyl having from about 10 to about 30 carbon atoms, or a mixture of said phosphonates; and from about 0.01 to about 1.0 weight percent of a composition having the general formula



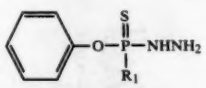
where n is an integer selected from 0, 1, 2 and 3 and R″ is selected from alkyl, alkenyl, alkadienyl, alkatrienyl, and mixtures thereof having from about ten to about thirty carbon atoms.

4,210,543
USE OF HYDRAZIDOTHIOATES AS ADDITIVES FOR FUNCTIONAL FLUIDS

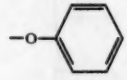
Frank J. Milnes, Guilford, and John R. Parziale, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 1, 1978, Ser. No. 956,556
Int. Cl.[2] C10M *1/48*
U.S. Cl. 252—46.7 **5 Claims**

1. A functional fluid composition comprising a major amount of an oil of lubricating viscosity or mixtures thereof and a minor load-carrying amount of additive selected from the group of hydrazidothioates of the formula:



wherein R_1 is selected from -$NHNH_2$ and



4,210,544
DUAL PURPOSE CUTTING OIL COMPOSITION

James R. Burton, Groves; Vernon W. Cantwell, Port Neches, both of Tex., and James E. Davis, Summerville, S.C., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 18, 1976, Ser. No. 715,356
Int. Cl.[2] C10M *3/26*
U.S. Cl. 252—47.5 **8 Claims**

1. A lubricating composition useful as a cutting oil comprising, in combination a major amount of a paraffinic base oil having a viscosity of about 90 to 190 SUS/100° F., 0.5 to 10 weight percent each of a di-tertiary alkyl polysulfide, and of a chlorinated paraffin and 0.01 to 1.0 weight percent of a 2,5-bis(n-alkyldithio)thiadiazole.

4,210,545

OXIDATION RESISTANT LUBRICANT COMPOSITION

Richard J. Lee, Downers Grove, and Eugene E. Richardson, Aurora, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 30, 1979, Ser. No. 25,656
Int. Cl.[2] C10M *1/38*
U.S. Cl. 252—47.5 9 Claims

1. The oil-soluble product prepared by the process comprising, (a) dissolving in an organic solvent in molar ratios from about 0.1 to about 1.0 mole of thio-oxamide, from about 0.2 to about 2.0 moles of a saturated aliphatic aldehyde having from 1 to about 20 carbon atoms, and from about 0.2 mole to about 2.0 moles of an olefin hydrocarbon having at least 8 carbon atoms, (b) agitating the solution while cooling the same to a temperature of about 34°–38° F., (c) adding to said cooled solution from about 10 parts to about 20 parts by weight boron triflouride etherate per 100 parts by weight of the solution of step (c).

5. A lubricant composition comprising a major amount of a normally liquid lubricating oil, and from about 0.1% to about 10% of the oil-soluble reaction product prepared by the process of claim 1.

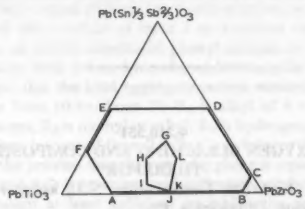
9. An addition agent concentrate for lubricating oils, comprising a lubricating oil containing from about 10% to about 75% of the oil-soluble reaction product prepared by the process of claim 1.

4,210,546

PIEZOELECTRIC CERAMIC COMPOSITIONS

Hiromu Ouchi, Toyonaka; Masamitsu Nishida, Osaka, and Shigeru Hayakawa, Hirakata,all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 2, 1975, Ser. No. 619,005
Claims priority, application Japan, Oct. 9, 1974, 49-116474; Oct. 9, 1974, 49-116475; Oct. 9, 1974, 49-116476; Oct. 9, 1974, 49-116477; Oct. 9, 1974, 49-116478
Int. Cl.[2] C04B *35/46, 35/48*
U.S. Cl. 252—62.9 4 Claims



1. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing CoO in an amount ranging from 0.1 to 5 weight percent.

2. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing Cr_2O_3 in an amount ranging from 0.1 to 5 weight percent.

3. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing Fe_2O_3 in an amount ranging from 0.1 to 5 weight percent.

4. A piezoelectric ceramic composition consisting essentially of a base ternary solid solution selected from those defined by and included within area A B C D E F of the diagram of FIG. 2 and further containing NiO in an amount ranging from 0.1 to 0.5 weight percent.

4,210,547

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING AMINOSILICONE-SILICATE POLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 348
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 4 Claims

1. A single-phase antifreeze and coolant concentrate consisting essentially of an alcohol, an aminosilicone-silicate polymer corrosion inhibitor, and a hydroxybenzoic acid pH buffer and corrosion inhibitor wherein said pH buffer is present in an amount of about 0.1 percent to about 1.5 percent by weight and said polymer corrosion inhibitor is present in an amount of from 0.1 percent to 10 percent by weight all based upon the weight of said concentrate and consists essentially of:

(A) from 0.1 to 99.9 parts by weight of siloxane groups represented by the formula:

$$Z_2NRSiO_{\frac{3-a}{2}}$$
(with R_a')

wherein Z is a member selected from the group consisting of the hydrogen atom, unsubstituted monovalent hydrocarbon groups, and substituted monovalent hydrocarbon groups containing from 0 to 1 hydroxy group as a substituent and from 0 to 1 amino group as a substituent; R is an unsubstituted divalent hydrocarbon group containing at least three carbon atoms; the Z_2N group is attached to at least the third carbon atom removed from the silicon atom; R' is an unsubstituted monovalent hydrocarbon group and a has a value from 0 to 2 inclusive and

(B) from 0.1 to 99.9 parts by weight of groups represented by the formula:

$$[M_{\frac{1}{b}}O]_cSiO_{\frac{4-c}{2}}$$

wherein M is a cation that forms a water soluble silicate selected from the group consisting of sodium, potassium, lithium, rubidium and tetra-organoammonium cations; b is the valence of the cation represented by M and has a value of at least one and c has a value from 1 to 3 inclusive and wherein said alcohol is selected from the group consisting of at least one of ethanol, methanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol and said pH buffer and corrosion inhibitor is selected from the group consisting of ortho or para hydroxybenzoic acid and mixtures thereof.

4,210,548

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ANTIFREEZE CONTAINING ORGANOSILOXANE-SILICATE COPOLYMERS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 350
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 4 Claims

1. A single-phase antifreeze or coolant concentrate consisting essentially of an alcohol is selected from the group consisting of methanol, ethanol, propanol, diethylene glycol, triethylene glycol, propylene glycol, glycerol and ethylene glycol, a water-soluble organosiloxanesilicate copolymer corrosion inhibitor, and at least one hydroxybenzoic acid pH buffer and corrosion inhibitor capable of buffering the pH in the range above about 9 to about 11 wherein said copolymer is present in

the amount of from 0.01 percent to 10 percent by weight based upon the weight of said concentrate and consists essentially of:

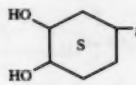
(1) from 0.1 to 99.9 parts by weight of at least one member selected from the group consisting of (a) siloxane groups represented by the formula:

$$RSiO_{1.5}$$

wherein R is a member selected from the group consisting of the methyl, ethyl, phenyl and vinyl groups and (b) siloxane groups represented by the formula:

$$[YC_aH_{2a}]_bSiO_{4-\frac{(b+c)}{2}}$$
$$\vert$$
$$R'_c$$

wherein Y is a member selected from the group consisting of the cyano group, $CH_2(OH)CH(OH)$ group, $CH_2(OH)CH(OH)CH_2$ group,



$CH_2(OH)CH(OH)CH_2O$—group and $R''(OCH_2CH_2)_n(OC_3H_6)_mO$—group, wherein R'' is a member selected from the group consisting of the monovalent hydrocarbons and the hydrogen atom, n and m are integers and n has a value of at least 1, m has a value from 0 to 20 inclusive, the ratio of n to m is at least 2 to 1, a is an integer and has a value of at least 2, C_aH_{2a} is an alkylene group, the group represented by Y is separated from the silicon atom by at least two successive carbon atoms, b is an integer and has a value of from 1 to 3 inclusive, R' is a monovalent hydrocarbon group, c is an integer and has a value from 0 to 2 inclusive, (b+c) has a value from 1 to 3 inclusive; and

(2) from 0.1 to 99.9 parts by weight of at least one silicate group represented by the formula:

$$\left[\frac{M_1O}{d}\right]_e SiO_{\frac{4-e}{2}}$$

wherein M is a cation that forms a water soluble silicate, d is the valence of the cation represented by M and has a value of at least 1 and e has a value from 1 to 3 inclusive, said parts by weight of said groups in the copolymer being based on 100 parts by weight of the copolymer wherein said pH buffer is at least one of para hydroxybenzoic acid and ortho hydroxybenzoic acid and is present in the amount of about 0.1 percent to about 1.5 percent by weight based upon the weight of said concentrate.

4,210,549

HYDROXYBENZOIC ACID AS PH BUFFER AND CORROSION INHIBITOR FOR ALKALI METAL SILICATE-CONTAINING ANTIFREEZE COMPOSITIONS

Stanley T. Hirozawa, Birmingham, Mich.; Edward F. O'Brien, Cromwell, Conn., and Joe C. Wilson, Belleville, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 2, 1979, Ser. No. 351
Int. Cl.[2] C09K *15/32*
U.S. Cl. 252—76 **7 Claims**

1. A single-phase antifreeze or coolant concentrate consisting essentially of a major proportion of at least one alcohol selected from the group consisting of methanol, ethanol, propanol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol and glycerol, an amount of about 0.05 to about 0.5 percent by weight of at least one water-soluble silicate and, as a pH buffer and corrosion inhibitor, about 0.1 to about 1.5 percent by weight of at least one hydroxybenzoic acid selected from the group consisting of ortho and para hydroxybenzoic acid, wherein said water-soluble silicate has the formula:

$$M_2O(SiO_2)_n$$

wherein M is an alkali metal and n has a value of about 0.5 to about 4, and wherein said buffer serves to maintain the pH of said antifreeze above about 9 to about 11.

4,210,550

DETERGENT COMPOSITION CONTAINING AN ALKALI CARBONATE

Emery G. Ph. Cornelissens, Nootdorp, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Jul. 14, 1978, Ser. No. 924,552
Int. Cl.[2] C11D *3/10, 3/20, 17/00, 17/04*
U.S. Cl. 252—90 **3 Claims**

1. A detergent composition containing 5–30 percent by weight of one or more surfactants, 5–80 percent by weight of an alkali carbonate, and an acid, the acidic constituent and the alkaline constituent being separately present in the composition, said acidic constituent dissolving in a wash liquor at an earlier moment than the alkaline constituent, and the total amount of alkali being present in excess relative to the amount of acid, characterized in that the acidic constituent contains 5 to 30 percent by weight, calculated on the total amount of detergent composition, of a mixture consisting of 20 to 40 percent by weight of adipic acid, 20 to 40 percent by weight of succinic acid and 20 to 60 percent by weight of glutaric acid.

2. The detergent composition of claim 1 characterized in that the alkaline constituent is provided with a coating which disintegrates in water only after at least 2 and at most 10 minutes.

4,210,551

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Gaylen R. Brubaker, Lawrenceville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 1, 1979, Ser. No. 16,712
Int. Cl.[2] C11D *7/54*
U.S. Cl. 252—102 **13 Claims**

7. A bleaching composition consisting essentially of a peroxygen bleaching compound and as a peroxygen activator therefor an imidoyl compound of the formula

$$R_1-N=\underset{\vert}{\overset{X}{C}}-R_2$$

wherein R_1 is an organic radical selected from the group consisting of hydrogen; an aliphatic radical of 1 to 18 carbon atoms; an aromatic radical of the benzene and naphthalene series and a heterocyclic radical of 1 to 2 rings each containing 5 to 6 members of which 1 to 3 are heteroatoms selected from the class consisting of nitrogen, oxygen and sulfur; R_2 is an organic radical selected from the group consisting of R_1 and —OR wherein R is equal to R_1 except for hydrogen and X is a leaving group, said radicals or leaving groups bearing non-interfering substituents.

4,210,552
SULFONIUM COMPOUNDS AS CORROSION INHIBITORS IN AQUEOUS ACIDIC CLEANING SOLUTIONS

Wayne W. Frenier, and William J. Settineri, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

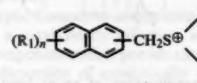
Continuation of Ser. No. 785,883, Apr. 8, 1977, abandoned, which is a division of Ser. No. 669,116, Mar. 22, 1976, Pat. No. 4,101,438, which is a continuation of Ser. No. 350,295, Apr. 11, 1973, abandoned, which is a continuation-in-part of Ser. No. 118,175, Feb. 23, 1973, Pat. No. 3,764,543. This application Sep. 28, 1978, Ser. No. 946,899

The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.

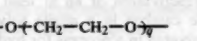
Int. Cl.[2] C11D *7/34*; C23G *1/06*

U.S. Cl. 252—151 **25 Claims**

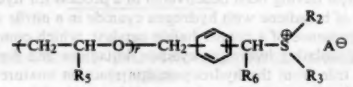
1. An aqueous acidic cleaning solution of at least one non-oxidizing inorganic acid having dissolved or dispersed therein a sulfonium salt corresponding to the formula



II



III



wherein n is 1 or 2; each R_1 independently is hydrogen or a hydrocarbyl, a hydrocarbyl whose chain length is interrupted by an atom of oxygen or sulfur, a hydrocarbyloxy or a hydrocarbylthio radical of from 1 to about 24 carbon atoms; R_2 is a hydrocarbyl or inertlysubstituted hydrocarbyl radical of from 1 to about 24 carbon atoms, with the proviso that the total aggregate carbon content of R_1 and R_2 is from 7 to about 25; R_3 is an alkyl radical of from 1 to 4 carbon atoms or an inertly-substituted alkyl radical of from 2 to 4 carbon atoms, allyl, phenyl or an inertly-substituted phenyl radical; or R_2 and R_3 are joined to form a 5-or 6-membered heterocyclic ring, with the proviso that the total aggregate carbon content of R_1, R_2 and R_3 is from 10 to about 25; R_4 is alkyl of 4 to about 20 carbon atoms; R_5 is methyl or ethyl; R_6 is hydrogen, methyl or ethyl; q is an integer of from 0 to 8; r is an integer of from 0 to 10, with the proviso that the sum of q plus r is equal to or less than 10; and $A^{\ominus}$ is an anion; said sulfonium salt being present in an amount at least sufficient to inhibit the acid-induced corrosion of ferrous metals in contact with said solution and ferric ions.

4,210,553
DETERGENT COMPOSITIONS CONTAINING 1-ACYL-2,6,6-TRIMETHYLCYCLOHEXENE DERIVATIVES AND PROCESSES FOR PREPARING SAME

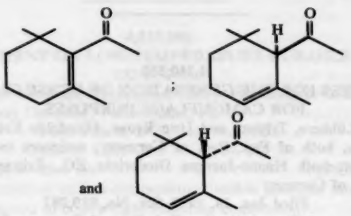
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Joaquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 965,418, Dec. 1, 1978, Pat. No. 4,172,850. This application May 15, 1979, Ser. No. 39,194

Int. Cl.[2] C11D *3/30*; C11B *9/00*

U.S. Cl. 252—174.11 **5 Claims**

1. A process for augmenting or enhancing the aroma of a liquid or solid anionic, cationic or nonionic detergent comprising intimately admixing with a liquid or solid anionic, cationic or nonionic detergent base from 0.1% up to 6% by weight of at least one 1-acetyl-2,6,6-trimethylcyclohexene derivative having a structure selected from the group consisting of:



and

4,210,554
FRAGRANCE COMPOSITIONS CONTAINING 3-METHYL-1-PHENYL-PENTANOL-5 OR SPECIFIC OPTICAL ISOMERS THEREOF AND ONE OR MORE BUTANOYL CYCLOHEXANE DERIVATIVES

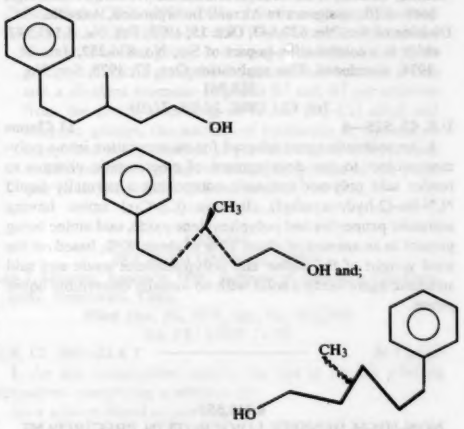
Frederick L. Schmitt, Holmdel, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 949,140, Oct. 6, 1978. This application Jul. 13, 1979, Ser. No. 57,414

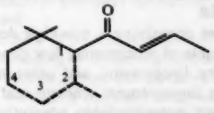
Int. Cl.[2] C11D *3/50*, *9/44*

U.S. Cl. 252—174.11 **3 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid detergent comprising the step of intimately admixing with a solid or liquid detergent base from 0.10% up to 1.0% of a mixture consisting essentially of 3-methyl-1-phenyl-pentanol-5 or stereoisomer thereof having a structure selected from the group consisting of:



and intimately admixed therewith a cyclohexylbutenone derivative having the structure:



wherein one or two of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond with the proviso that when two of the dashed lines are carbon-carbon double bonds said carbon-carbon dou-

ble bonds are conjugated based on said solid or liquid anionic, cationic or nonionic detergent base.

4,210,555

PROCESS FOR THE GENERATION OF DENSE CLOUDS FOR CAMOUFLAGE PURPOSES

Willi Lübbers, Trittau, and Uwe Krone, Hamfelde Krs. Stormarn, both of Fed. Rep. of Germany, assignors to Nico-Pyrotechnik Hanns-Juergen Diederichs KG., Trittau, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,987

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1977, 2729055

Int. Cl.[2] C09K *3/30*

U.S. Cl. 252—305 4 Claims

4. A composition for generating dense clouds for camouflage purposes, consisting essentially of finely divided solid particles in the form of microfine powder, said particles being selected from powders of talc, kaolin, calcium carbonates, magnesium carbonates and sodium hydrogen carbonates, the particles having a diameter from 3 to 60 μm and being impenetrable to visible light and infra-red light of up to 14 μm wavelength, said microfine powder being rendered flowable by being discharged and dispersed from a container by means of compressed gas.

4,210,556

SOLID ANTISTATIC COMPOSITIONS

Anthony J. Castro, La Grange, and James W. Stoll, Woodridge, both of Ill., assignors to Akzona Incorporated, Ashville, N.C.

Division of Ser. No. 622,643, Oct. 15, 1975, Pat. No. 4,147,742, which is a continuation-in-part of Ser. No. 436,252, Jan. 24, 1974, abandoned. This application Oct. 27, 1978, Ser. No. 955,561

Int. Cl.[2] C08L *23/06, 71/04*

U.S. Cl. 525—6 11 Claims

1. An antistatic agent adapted for incorporation into a polymer subject to the development of electrostatic charges to render said polymer antistatic comprising a normally liquid N,N-bis-(2-hydroxyethyl) aliphatic (C_6–C_{18}) amine having antistatic properties and polyphenylene oxide, said amine being present in an amount of about 10% to about 90%, based on the total weight of the amine and polyphenylene oxide and said antistatic agent being a solid with no visually discernible liquid phase.

4,210,557

NON-HIGH DENSITY LIPOPROTEIN PRECIPITANT

Gerald J. Handschuh, Carlsbad, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 15, 1978, Ser. No. 970,050

Int. Cl.[2] G01N *31/02, 33/16;* G09K *3/00*

U.S. Cl. 252—408 34 Claims

1. In a reagent comprising a non-high density lipoprotein precipitator capable of precipitating low density lipoproteins, very low density lipoproteins, and other non-high density lipoproteins, the improvement wherein said reagent further comprises an inert, water-insoluble, adsorptive agent which is non-interfering with analysis of HDL cholesterol and capable of enhancing the flocculation of a precipitant formed by said precipitator and said non-high density lipoprotein fractions in highly lipemic serum.

4,210,558

REACTIVATION OF SPENT COPPER CONTAINING HYDROCYANATION CATALYSTS

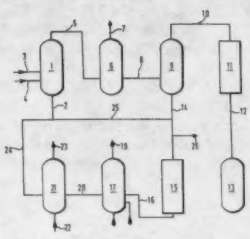
Graham R. Crooks, Wilton, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 27, 1978, Ser. No. 955,246

Claims priority, application United Kingdom, Nov. 7, 1977, 46211/77

Int. Cl.[2] B01J *27/32;* C07C *120/02*

U.S. Cl. 252—415 7 Claims



1. A process for the reactivation of an at least partially deactivated copper halide catalyst in a nitrile solvent, said catalyst having been deactivated in a process for hydrocyanation of butadiene with hydrogen cyanide in a nitrile solvent in the presence of a copper halide catalyst, which comprises;

(a) isolating hydrogen cyanide, butadiene and 3-pentenenitrile from the hydrocyanation reaction mixture and collecting a reaction mixture residue comprising said nitrile solvent and catalyst and;

(b) treating said reaction mixture residue with hydrogen halide in an amount sufficient to reactivate said catalyst for re-use in said hydrocyanation reaction.

4,210,559

CATALYST FOR THE PREPARATION OF POLYALPHA-OLEFINS HAVING BROAD MOLECULAR WEIGHT DISTRIBUTIONS

John L. Melquist, Naperville, Ill.; Nicholas K. Kildahl, Shrewsbury, Mass., and Peter Fotis, Highland, Ind., assignors to Standard Oil Company of Indiana, Chicago, Ill.

Filed Oct. 30, 1978, Ser. No. 955,775

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—431 R 28 Claims

1. A catalyst for the polymerization of alpha-olefins consisting essentially of (A) an organometallic promoter and (B) a solid component which is the reaction product of an alkylaluminum dihalide; at least one titanium(IV) compound selected from the group consisting of halides, alkoxides, and alkoxyhalides; and at least one zirconium(IV) alkoxide; wherein the atomic ratio of titanium to zirconium ranges from about 0.01:1 to about 100:1, the alkylaluminum dihalide is employed in an amount such that the atomic ratio of aluminum to titanium plus zirconium ranges from about 1:1 to about 40:1 and the atomic ratio of total halogen in the system to the sum of elemental titanium and zirconium is at least 4:1; said reaction being carried out at about −20° to about 140° C. and including a first step wherein at least said zirconium alkoxide is present.

4,210,560

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 958,804

Int. Cl.[2] B01J *27/14*

U.S. Cl. 252—437 21 Claims

1. A catalyst support comprising a magnesia-alumina-

aluminum phosphate matrix characterized after calcination at 500° C. for 10 hours as amorphous, and having an average pore radius of from about 10° A to about 300° A; a surface area ranging from about 100 M^2/g to about 350 M^2/g; a pore volume of from about 0.3 cc/g to about 1.5 cc/g; wherein the magnesia-alumina-aluminum phosphate matrix has a mole percent ratio of from about 10:80:10 to about 25:10:65, and wherein said matrix retains at least 90% of its surface area when the matrix is additionally calcined at a temperature up to about 750° C. for about 10 hours.

4,210,561

ACTIVATED AND ATTENUATED MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 888,705, Mar. 20, 1978, Pat. No. 4,156,640, which is a continuation-in-part of Ser. No. 848,699, Nov. 4, 1977. This application Nov. 30, 1978, Ser. No. 965,373

Int. Cl.² B01J *27/08, 27/10, 23/60*

U.S. Cl. 252—441 **18 Claims**

1. A catalytic composite comprising the pyrolyzed reaction product of a catalytically effective amount of a ruthenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component maintained in the elemental metallic state and of a zinc component.

4,210,562

CELLULOSE-CONTAINING PHENOLIC RESIN-BASED BINDER

Frank P. McCombs, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 8, 1979, Ser. No. 1,985

Int. Cl.² C08L *1/28*

U.S. Cl. 260—14 **5 Claims**

1. A hardenable binder composition consisting essentially of phenolic resin, hydroxyethylcellulose and a silane, said hydroxyethylcellulose being present in an amount sufficient to increase the wet tensile strength of the binder composition after cure thereof.

4,210,563

SAND MOLD COMPOSITIONS CONTAINING SCENTED WOOD

Masamitsu Miki, No. 25-15, 1-chome, Nakahara, Mitaka-shi, Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 946,954

Claims priority, application Japan, Oct. 4, 1977, 52-118575

Int. Cl.² C08L *1/00;* B22C *1/22*

U.S. Cl. 260—17.2 **5 Claims**

1. A moldable composition for the production of forms, cores or shell molds which comprises sand, a synthetic resin binder and wood meal, said wood meal being scented and emitting a fragrance when heated and being present in an amount 0.5 to 5% based on the weight of the resin content of the composition.

4,210,564

AQUEOUS DISPERSIONS OF POLYVINYLBUTYRAL

Jean-Marie Pouchol, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 15, 1977, Ser. No. 851,768

Claims priority, application France, Nov. 24, 1976, 76 36147; Mar. 31, 1977, 77 10493

Int. Cl.² C08L *29/04*

U.S. Cl. 260—29.6 B **19 Claims**

1. A method for preparing an aqueous dispersion of polyvinylbutyral, free from plasticizer, comprising reacting a mixture of butanal and an α-aldehydic acid with an aqueous solution of polyvinyl alcohol in the presence of phosphoric acid to effect, simultaneously, butyralization of the polyvinyl alcohol and dispersion of the product polyvinylbutyral.

4,210,565

AMBIENT OR LOW-TEMPERATURE CURABLE COATINGS

William D. Emmons, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Feb. 2, 1979, Ser. No. 9,023

Int. Cl.² C08F *216/34, 16/34, 20/02*

U.S. Cl. 260—29.6 TA **19 Claims**

1. An ambient or low-temperature curable polymer composition adapted to coat a rigid substrate comprising:

a. a polymer polymerized from a monomer mixture comprising (1) from about 0.25% to about 35% by weight of a polymerizable aldehyde, and (2) at least one copolymerizable mono-ethylenically unsaturated monomer selected from the group consisting of α,β-ethylenically unsaturated carboxylic acid, (C_1–C_{24})alkyl methacrylates, (C_1–C_{24})alkyl acrylates, vinylidene halides, vinyl halides, (meth)acrylonitrile, vinyl esters, ethylene and alpha-olefins, acrylic and methacrylic acid esters of alcohol-ethers, vinyl ether, styrene and alkyl-substituted styrenes and vinyl aromatics, the combination of monomers being selected to provide a T_g of the polymer of greater than about 0° C.; and

b. a curing agent comprising a member selected from the group consisting of a dicarboxylic acid bis-hydrazide represented by the formula, H_2N—NH—C(O)—R—C(O)—NH—NH_2, and a dicarboxylic acid bis-hydrazone represented by the formula R^1R^2C=N—NH—C(O)—R—C(O)—NH—N=CR^1R^2, and acrylic oligomers and low molecular weight acrylic solution polymers containing a plurality of pendant hydrazide groups of the formula —C(O)—NH—NH_2 or hydrazone groups of the formula —(O)—NH—N=CR^1R^2, wherein R is a member selected from the group consisting of a divalent alkylene group or alicyclic group having from 0 to 34 carbon atoms and a divalent aromatic ring and R^1 and R^2 are selected from the group consisting of H and (C_1–C_6) alkyl and alicyclic groups, the amount of hydrazide or hydrazone compound being selected to provide a ratio of hydrazide or of hydrazone groups to aldehyde groups of the polymer in the dispersion of from about 1:2 to 2:1.

4,210,566

JET INK COMPOSITIONS

Lee J. Murray, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 26, 1978, Ser. No. 972,998

Int. Cl.² C09D *11/02*

U.S. Cl. 260—31.8 T **26 Claims**

1. An ink composition suitable for use in jet ink printing operations comprising a solution of:

(a) a solvent blend comprised of;

(i) from about 50 to 90% n-propyl acetate as a major solvent;

(ii) a secondary solvent of from about 2 to 30% of a high boiling solvent selected from the group consisting of methyl cellosolve, dimethyl formamide, and 2,4-pentanedione; and

(iii) about 6 to 30% of an auxiliary solvent selected from the group consisting of lower aliphatic alcohols having from 1 to 3 carbon atoms, and mixtures thereof;

(b) about 0.5 to 5.0% of a colorant comprised of at least a primary dye, soluble and compatible with the ink composition components;

(c) about 3 to 25% of a binder soluble and compatible with the solvent blend, and

(d) an effective amount of an electrolyte, all of said percent-

ages being based on the total weight of the ink composition.

4,210,567

PLASTISOL OF AN ACRYLATE POLYMER AND A PLASTICIZER

Bernhard Kösters, Heidelberg, Fed. Rep. of Germany, assignor to Teroson G.m.b.H., Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 630,271, Nov. 10, 1975, abandoned. This application Feb. 27, 1978, Ser. No. 881,745

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1975, 2529732; Nov. 15, 1974, 2454235

Int. Cl.[2] C08L *33/08, 33/10, 33/12*

U.S. Cl. 260—31.8 R **18 Claims**

1. A plastisol consisting essentially of

(a) 100 weight parts of solid particles of an organic polymer having units derived from a monomer selected from t-butylacrylate or methyl, ethyl, n-propyl, isopropyl, isobutyl, sec-butyl, t-butyl or cyclohexyl methacrylate, and copolymers of at least one said monomer with at least one comonomer selected from methacrylates of alphatic C_2 to C_{10} alcohols, acrylates of C_1 to C_{10} alcohols, styrene and a-methyl-styrene, whereby the polymer has an average particle size of 0.1 to 500 microns, a glass transition temperature above 35° C. and an average degree of polymerization of more than 400,

(b) 0.1 to 50 parts by weight of an adhesion promoter, said adhesion promoter selected from triethyleneglycol dimethylacrylate, trimethylol trimethylacrylate combined with peroxides, amino silanes and mixtures thereof, and

(c) 30 to 1000 parts of an organic liquid plasticizer which is sufficiently compatible with the polymer that at least 8 days after gelling of said plastisol the plasticizer does not exude from said plastisol, said plasticizer further being effective to provide the plastisol with a viscosity index $V_{8/0}$ of less than 3.0; the average particle size of polymer (a) being related to its glass transition temperature so as to lie within the triangle XYZ of the accompanying drawing, said plastisol further being in the form of a liquid or paste-like dispersion of polymer particles in plasticizer capable of being gelled by heating to a temperature between about 70° and 240° C.

2. In a plastisol, in which solid particles of an organic polymer component (a) are dispersed in an organic liquid component (b), which serves as a compatible plasticizer for the organic polymer, in a proportion effective to form a viscous dispersion having a liquid or paste-like appearance capable of being gelled by heating, the improvement in which the organic polymer component consists essentially of units derived from

(i) at least one monomer selected from: t-butyl acrylate, a C_{1-4} alkyl methacrylate and cyclohexyl methacrylate, or

(ii) at least one of the above monomers and at least one comonomer selected from: methacrylates of aliphatic C_2 to C_{10} alcohols, acrylates of aliphatic C_1 to C_{10} alcohols, styrene and alphamethylstyrene, and, as an adhesion promoter comonomer in said organic polymer component,

(iii) at least one adhesion promoter comonomer selected from acrylate monomer with free functional groups selected from the group consisting of carboxyl, hydroxyl, epoxy and amino functional groups, methacrylate monomer with free functional groups selected from the group consisting of carboxyl, hydroxyl, epoxy and amino functional groups, copolymerizable heterocyclic vinyl compound of the general formula

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-(CH_2)_n-R_2$$

in which n is equal to 0 or 1, R_1 is a hydrogen atom, a linear or branched chain alkyl group with 1 to 4 carbon atoms or a phenyl group and R_2 is a group of the formulae

$$-\overset{\displaystyle O}{\overset{\|}{C}}-OR_3,\quad -COR_3,\quad \text{or}\quad R_3$$

in which R_3 is a heterocyclic group having at least one ring with

at least one nitrogen atom in the ring,

the polymer having a glass transition temperature of above 35° C. and an average degree of polymerization of more than 400, and the average particle size of the polymer in the plastisol being from 0.1 to 500 microns; said plasticizer being present in an amount of from 30 to 1000 parts per 100 parts by weight of said polymer and being sufficiently compatible that at least 8 days after the gelling of said plastisol, the plasticizer does not exude from said plastisol, said plasticizer moreover being effective to provide the plastisol with a viscosity index $V_{8/0}$ of less than 3.0.

4,210,568

PLASTICIZATION OF NEUTRALIZED SULFONATED ELASTOMERIC POLYMER WITH ORGANIC CARBAMATES

Henry S. Makowski, Scotch Plains; Robert D. Lundberg, Bridgewater, and Robert R. Klein, Berkley Heights, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 20, 1978, Ser. No. 898,465

Int. Cl.[2] C08K *5/16*

U.S. Cl. 260—32.4 **56 Claims**

1. A polymeric composition including:

(a) a neutralized sulfonated polymer having 15 to about 50 meq. neutralized sulfonate groups per 100 grams of said sulfonated polymer, said neutralized sulfonate groups containing metal, ammonium or amine cations; and

(b) about 1 to about 75 parts by weight of an N-substituted organic carbamate per 100 parts said neutralized sulfonated polymer said N-substituted organic carbamate having the formula selected from the group consisting of

$$R_1-NHC-OR_2$$
$$\|$$
$$O$$

wherein R_1 and R_2 are normal or branched chain alkyl, cycloalkyl, aryl, alkaryl, or arylalkyl groups, either R_1 or R_2 must be a long chain alkyl group having about 10 to about 50 carbon atoms,

$$R_3-(O-C-NH-R_4)_m$$
$$\|$$
$$O$$

wherein m is 2, 3 or 4, R_4 is a long chain, linear saturated alkyl group having about 10 to about 50 carbon atoms and R_3 is a di-, tri-, or tetrafunctional aliphatic, cycloaliphatic, aryl, or alkaryl group, and

$$R_5-(NH-C-OR_6)_n$$
$$\|$$
$$O$$

wherein n is 2, 3 or 4, R_6 is a long chain, linear saturated alkyl group having 10 to about 50 carbon atoms and R_5 are di-, tri-, or tetrafunctional aliphatic, cycloaliphatic, aryl, or alkylaryl groups.

4,210,569

POLYMERIC ADHESIVE ANTIHALATION COMPOSITION FOR MAKING METAL-BACKED PHOTOPOLYMERIC PRINTING FORMS

Valentina G. Syajuk, ulitsa Stefanika, 15, kv. 9, Lvov; Eduard T. Lazarenko, ulitsa K. Libknekhta, 2, kv. 13, Lvov; Yaroslav A. Ovdienko, ulitsa Stavropigiiskaya, 3, kv. 2, Lvov; Vladislav V. Bernatsek, ulitsa Shishkina, 20, kv. 4, Lvov; Vladislav F. Jurin, ulitsa Fedoseeva, 35, kv. 49, Lysiva Permskoi oblasti, and Anatoly F. Nikolaev, ulitsa Shkolnaya, 15, kv. 42, Leningrad, all of U.S.S.R.

Filed Mar. 19, 1979, Ser. No. 21,360
Int. Cl.² G03C *1/84*; C08K *5/07*
U.S. Cl. 260—328 EP 1 Claim

1. As adhesive antihalation composition for making metal-backed photopolymeric printing forms, consisting of the following components:

an adhesive comprising a product of copolymerization of diphenylol-propane epoxy resin with a molecular weight from 360 to 3000 and phenol-formaldehyde novolac resin with a molecular weight from 400 to 1000 in a weight ratio of 1:1 in the product;

an antihalation component selected from the group consisting of iron oxide and chromium oxide;

a solvent comprising a mixture of ethanol and acetone in a volumetric ratio of 1:1;

said components being used in the composition in the following proportions (in % by weight):

antihalation component: 10–15
adhesive: 35–45
solvent: 55–40.

4,210,570

BLENDS OF SUBSTANTIALLY AMORPHOUS OLEFIN COPOLYMERS, COMPATIBLE TACKIFYING RESINS AND PLASTICIZING OILS USEFUL AS HOT MELT, PRESSURE-SENSITIVE ADHESIVES

Jimmy R. Trotter; Frederick B. Joyner, and Richard L. McConnell, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1978, Ser. No. 867,643
Int. Cl.² C08K *5/01*
U.S. Cl. 260—33.6 AQ 16 Claims

1. An adhesive composition capable of being used as a hot-melt, pressure-sensitive adhesive comprising a blend of

(1) about 98 to 25 weight percent of a substantially amorphous or semicrystalline olefin copolymer containing at least one C_3 to C_5 linear alpha-olefin and 15 to 60 mole percent of at least one higher linear alpha-olefin of 6 to 10 carbon atoms, said copolymer having a melt viscosity of 5,000 to 1,000,000 centipoise at 190° C.,

(2) 1 to 60 weight percent of at least one compatible tackifying resin, and

(3) 1 to 25 weight percent plasticizing oil.

4,210,571

SURFACTANTS AND THEIR USE AS COUPLING AGENTS IN THERMOSETTING POLYMERS

Daniel F. Herman, Princeton, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Sep. 28, 1978, Ser. No. 946,624
Int. Cl.² C08K *9/04*
U.S. Cl. 260—40 R 25 Claims

1. A composition comprising a vinyl carboxylic acid ester derivative of a compound selected from the group consisting of a polyoxyethylene ether derivative of mono-, di-, and trihydroxy fatty acid esters of C_1 to C_4 mono- and polyhydric alcohols.

4,210,572

COUPLING AGENTS FOR THERMOSETTING COMPOSITES

Daniel F. Herman, Princeton, and Francis C. Naughton, Mountainside, both of N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Aug. 29, 1978, Ser. No. 937,748
Int. Cl.² C08K *9/04*
U.S. Cl. 260—40 R 14 Claims

1. A thermosettng resin composition comprising a thermosetting resin, a particulate inorganic mineral filler and a coupling agent, said coupling agent being present in an amount of from about 0.2 to 3% by weight of filler and comprising a polyoxyalkylene glycol ether derivative of a compound selected from the group consisting of mono-, di-, and tri-hydroxy fatty acid esters of C_1 to C_4 mono- and polyhydric alcohols.

4,210,573

POLYOLEFIN CONTAINERS HAVING IMPROVED GAS BARRIER PROPERTIES

Stephen W. Cornell, Naperville, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Dec. 7, 1978, Ser. No. 967,344
Int. Cl.² C08K *9/06*
U.S. Cl. 260—42.15 7 Claims

1. In a process for compression molding containers from billets prepared from polyolefin resins having incorporated therein inorganic fillers to impart low oxygen gas permeability thereto the improvement which consists essentially of treating the fillers prior to their incorporation in the polyolefin resin with a polar silane compound having the general formula

$$SiR_1R_2R_3(CH_2)_xR_4$$

wherein R_1, R_2 and R_3 are alkoxy groups and R_4 is a polar group selected from the group consisting of amino, (amino-ethyl) amino, cyano and trifluoro and x is an integer of 1 to 3 whereby the containers when subjected to food sterilization conditions undergo a limited change in gas permeability.

4,210,574

PROCESS FOR PREPARING FILLED POLYVINYL CHLORIDE COMPOSITIONS

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 655,125, Feb. 4, 1976, Pat. No. 4,132,700. This application May 22, 1978, Ser. No. 907,992
Int. Cl.² C08K *9/04*
U.S. Cl. 260—42.16 8 Claims

1. In a process for preparing a polyvinyl chloride composition having increased tensile strength and improved color, the step comprising adding to said polyvinyl chloride composition finely divided particles of kaolinite said particles having been pretreated by adding said particles to a dilute aqueous solution containing ammonia or an amine to form a slurry, agitating said slurry to thoroughly expose the kaolinite particles to the action of the solution, separating said particles from said slurry and drying said separated particles prior to incorporating said particles into said polyvinyl chloride composition.

4,210,575

ANTI-CORROSION COMPOSITIONS

Cyril F. Drake, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,129
Claims priority, application United KingdomZ, Jun. 3, 1977, 23790/77
Int. Cl.² C08K *3/32*
U.S. Cl. 260—42.52 5 Claims

1. A paint composition adapted to inhibit corrosion of a metal surface to which it is applied, the composition including a glass material dispersed in a resin carrier, in which said glass consists, as its major constituents, of phosphorus pentoxide and

zinc oxide, which together provide the glass forming oxide and glass modifying oxide respectively of the glass, together with a minor proportion of one or more metal oxides selected from the group consisting of alumina, ferric oxide, gallium oxide, titanium oxide and an oxide of a metal of Group IIA of the periodic table, the composition of the glass being such that, when the glass is contacted with water, zinc and phosphate ions leach into solution.

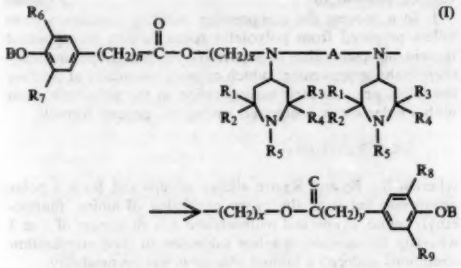
4,210,576

STABILIZERS FOR POLYMERS AND POLYMERS STABILIZED THEREBY

Piero Di Battista, S. Donato Milanese; Renzo Fontanelli, Milan; Francesco Gratani, Sesto San Giovanni, and Giuseppe Nelli, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 28, 1978, Ser. No. 964,161
Claims priority, application Italy, Nov. 29, 1977, 30139 A/77
Int. Cl.[2] C08K *5/34*; C07D *401/12*
U.S. Cl. 260—45.8 NE **14 Claims**

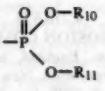
1. Derivatives of N,N'-piperidyl-tetralkyl-substituted alkylene diamine having the formula (I):



(I)

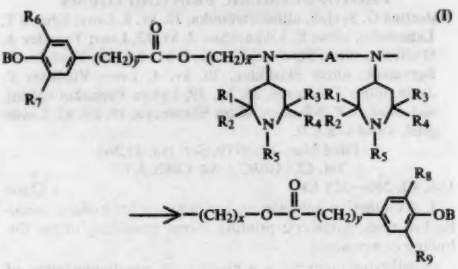
in which: each of R_1, R_2, R_3 and R_4, which may be the same or different, is an alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or an alkyl having 1 to 4 carbon atoms; A is an alkylene group having 2 to 10 carbon atoms or a cycloalkylene group having 4 to 10 carbon atoms; x and y are integers from 0 to 10; each of R_6, R_7, R_8 and R_9, which may be the same or different, is a linear or ramified alkyl group having 1 to 8 carbon atoms or an aralkyl group having 7 to 18 carbon atoms, and B is hydrogen, a linear or ramified alkyl group having 1 to 8 carbon atoms, a cycloalkyl, aryl or alkyl-aryl group having 4 to 18 carbon atoms, a phosphite group

or a phosphate group



in which each of R_{10} and R_{11}, which may be the same or different, is an alkyl radical having 1 to 6 carbon atoms, an alkenyl radical having 2 to 6 carbon atoms, a cycloalkyl, aryl, arylene or alkyl-aryl radical having 4 to 18 carbon atoms or R_{10} and R_{11} together form an aromatic nucleus, or a substituted aromatic nucleus.

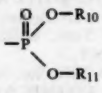
3. Compositions comprising synthetic thermoplastic polymers stabilized to sunlight, to heat and to ageing, and having incorporated therein, in an amount sufficient to prevent degradation of the polymer, a compound having formula:



(I)

in which: each of R_1, R_2, R_3 and R_4, which may be the same or different, represent an alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or an alkyl having 1 to 4 carbon atoms; A is an alkylene group having 2 to 10 carbon atoms or a cycloalkylene group having 4 to 10 carbon atoms; x and y are integers from 0 to 10; each of R_6, R_7, R_8 and R_9, which may be the same or different, is a linear or ramified alkyl group having 1 to 8 carbon atoms, or an aralkyl group having 7 to 18 carbon atoms, and B is hydrogen, a linear or ramified alkyl group having 1 to 8 carbon atoms, a cycloalkyl, aryl or alkylaryl group having 4 to 18 carbon atoms, a phosphite group

or a phosphate group



in which R_{10} and R_{11}, which may be the same or different, represent an alkyl radical having 1 to 6 carbon atoms, an alkenyl radical having 2 to 6 carbon atoms, a cycloalkyl, aryl, arylene or alkyl-aryl radical having 4 to 18 carbon atoms, or R_{10} and R_{11} together form an aromatic necleus, or a substituted aromatic nucleus.

4,210,577

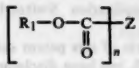
STABILIZERS FOR SYNTHETIC POLYMERS COMPRISING 2,2,6,6-TETRAMETHYL-4-PIPERIDYL CARBOXYLIC ACID ESTER, PHOSPHONIC ACID ESTER AND PHENOL

Motonobu Minagawa, Kosigaya; Yutaka Nakahara, Iwatsuki; Naohiro Kubota, and Toshihiro Shibata, both of Urawa, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Dec. 8, 1977, Ser. No. 858,599
Claims priority, application Japan, Dec. 24, 1976, 51-155972
Int. Cl.[2] C08K *5/13, 5/34, 5/35, 5/53*
U.S. Cl. 260—45.8 NT **35 Claims**

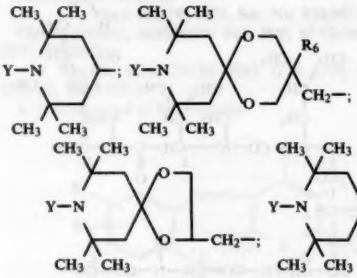
1. A stabilizer composition for organic polymeric materials comprising

(a) a 2,2,6,6-tetramethyl-4-piperidyl carboxylic acid ester in an amount from about 90 to about 35 parts by weight and having the general formula:



wherein:

R_1 is selected from the group consisting of

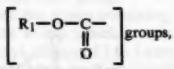


Y is selected from the group consisting of hydrogen and O·;

R_6 is lower alkyl having from one to two carbon atoms;

n is selected from the group consisting of 1, 2, 3 and 4; and

Z is an organic radical having a valence from 1 to 4, the valence positions being taken by

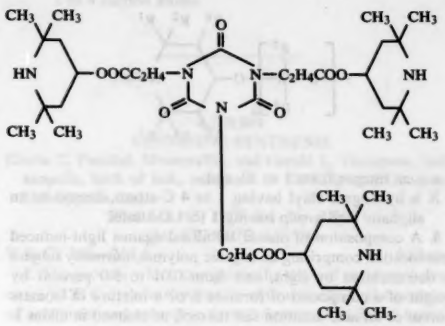


and from one to about twenty carbon atoms, and selected from the group consisting of alkyl, alkenyl, alkylene, alkenylene, alkylidene; aryl, arylene, aralkyl, aralkylene, aralkylidene, alkaryl, alkarylene, alkarylidene; tris (N,N',N''-alkylene)cyanuric acid, bis (N,N'-alkylene)piperazine, cycloaklyl, cycloaklenyl, cycloalkylene, cycloalkenylene, cycloalkylidene, alkcycloalkyl, alkcycloalkenyl, alkcycloalkenylene, alkcycloalkylene, cycloalkalkylene, cycloalkalkyl, cycloalkalkenyl, and cycloalkalkenylene, aminoalkylene, nitriloalkylene and hydroxyarylenealkylene;

(b) a phosphonic acid ester in an amount of from about 10 to about 35 parts by weight; and

(c) a phenolic antioxidant in an amount of from about 10 to about 35 parts by weight.

32. An olefin polymer composition having improved resistance to deterioration comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having from two to six carbon atoms and polystyrene, and an amount to enhance the resistance of the polymer to deterioration of a stabilizer composition comprising diphenyl phenyl phosphonate, 1,3,5-tris(3,5-di-t-butyl-4-hydroxy benzyl)-isocyanurate and the piperidine compound



4,210,578

4-SILOXY DERIVATIVES OF POLYALKYLATED PIPERIDINES

Jean Rody, Basel, Switzerland; Gerd Greber, Bad Vöslau, Austria, and Helmut Müller, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Sankyo Company, Limited, Tokyo, Japan

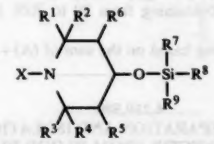
Continuation of Ser. No. 853,664, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,824, May 19, 1976, abandoned. This application Nov. 17, 1978, Ser. No. 961,836

Claims priority, application United Kingdom, May 28, 1975, 23351/75

Int. Cl.[2] **C07D** *211/46, 401/12, 401/14;* **C08K** *5/54*

U.S. Cl. 260—45.8 N **12 Claims**

1. A compound of formula I



(I)

or a mixture of isomers thereof or an acid addition salt thereof, wherein

R^1 and R^3 are each ethyl,

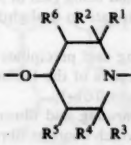
R^2, R^4 and R^5 are each methyl,

R^6 is hydrogen and

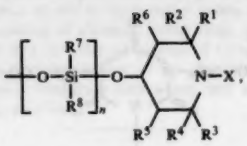
R^5 and R^6 are interchangeable,

R^7 is hydrogen, methyl, phenyl or vinyl,

R^8 and R^9 are independently of each other hydrogen, methyl, phenyl, vinyl, alkoxy having 1–8 C-atoms, phenoxy which may be substituted by an alkyl group having from 1 to 4 carbon atoms, or a group of the formula



and if R^7 and R^8 are hydrogen, methyl, phenyl or vinyl, R^9 may also be a residue of the formula



n is an integer from 1 to 10, and

X is hydrogen, alkyl having 1 to 4 C-atoms, benzyl or an aliphatic acyl group having 1 to 4 C-atoms.

5. A composition of matter stabilized against light-induced deterioration comprising an organic polymer, normally subject to deterioration by light, and from 0.01 to 5.0 percent by weight of a compound of formula I, or a mixture of isomers thereof or an acid addition salt thereof, as claimed in claim 1.

4,210,579

THERMOPLASTIC MIXTURES OF POLYPROPYLENE WITH ETHYLENE/VINYL ACETATE AND ETHYLENE/PROPYLENE COPOLYMERS

Ulrich Grigo, Krefeld; Josef Merten, Korschenbroich; Rudolf Binsack, and Erhard Tresper, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 12, 1979, Ser. No. 19,448

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811548

Int. Cl.[2] **C08L** *23/16, 53/00, 45/00*

U.S. Cl. 525—88 **6 Claims**

1. A thermoplastic mixture comprising

(A) from 2 to 40% by weight of a partially crystalline sequential ethylene/propylene copolymer or terpolymer having an ethylene content of from 70 to 90% by weight and an endothermic heat of fusion of from 6 to 18 cal/g,

(B) from 30 to 93% by weight of a crystalline polypropylene having an isotactic content of more than 90%, and

(C) from 5 to 30% by weight of a copolymer of ethylene and vinyl acetate containing from 20 to 70% by weight of vinyl acetate,

the percentages being based on the sum of (A)+(B)+(C).

4,210,580

PROCESS FOR SEPARATION AND ISOLATION OF AHF AND FIBRONECTIN FROM BLOOD PLASMA

David Amrani, 75 Rumson Rd., Staten Island, N.Y. 10304

Filed Jun. 19, 1979, Ser. No. 49,965

Int. Cl.[2] **A23J** *1/06;* **A61K** *35/16;* **C07G** *7/00*

U.S. Cl. 260—112 B **7 Claims**

1. A process for the separation and isolation of AHF and fibronectin fractions from blood plasma comprising:

(a) adding a sulfated mucopolysaccharide to blood plasma to a concentration of 0.15–0.25 mg/ml of plasma;

(b) then cooling said plasma to 0° C.–15° C.;

(c) centrifuging the plasma to isolate a precipitate which forms;

(d) removing the supernatant liquid from the precipitate, said supernatant liquid being rich in AHF;

(e) washing the precipitate in a slightly basic solution of dilute salts;

(f) thereafter dissolving said precipitate in a buffered solution of chaotrophic salts of the Hofmeister series having an ionic strength from 0.01–1;

(g) and thereafter separating said fibronectin from the dissolved precipitate which contains fibronectin and fibrinogen by chromotographic means.

2. A process as claimed in claim 1, wherein said mucopolysaccharide is heparin.

4,210,581

ORGANIC COMPOUNDS

Artur Rüegger, Bottmingen, and Max Kuhn, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 736,106, Oct. 27, 1976. This application Jun. 9, 1978, Ser. No. 914,118

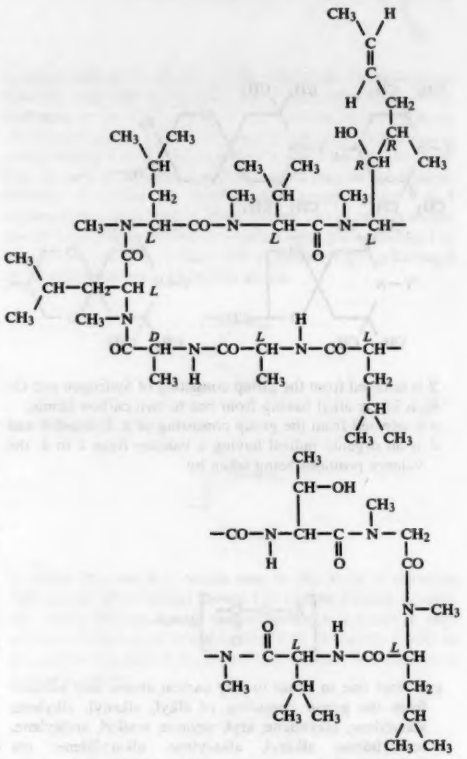
Claims priority, application Switzerland, Nov. 4, 1975, 14195/75

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.[2] **C07C** *103/52;* **A61K** *37/00;* **C07D** *210/00*

U.S. Cl. 260—112.5 R **3 Claims**

1. Cyclosporin C of formula,



4,210,582

WATER-SOLUBLE PYRAZOLONE-IMIDE CONTAINING AZO DYESTUFFS

Rene de Montmollin, Riehen, and Hans-Ulrich Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

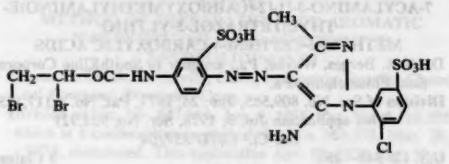
Continuation of Ser. No. 638,776, Dec. 8, 1975, abandoned, which is a continuation of Ser. No. 324,034, Jan. 16, 1973, abandoned. This application Jul. 25, 1977, Ser. No. 818,682

Claims priority, application Switzerland, Jan. 27, 1972, 1227/72

Int. Cl.[2] **C09B** *29/38*

U.S. Cl. 260—154 **2 Claims**

1. A monoazo dyestuff of the formula



4,210,583
AZO DYES OF THE 2,6-DI(SUBSTITUTED) AMINO PYRIDINE SERIES

Johannes Dehnert, Ludwigshafen; Walter Kurtz, Bad Duerkheim, and Gunther Lamm, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

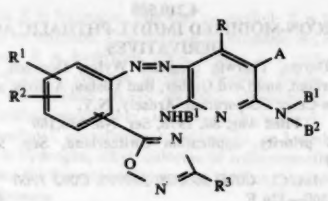
Filed Jul. 28, 1978, Ser. No. 928,967

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1977, 2734927

Int. Cl.[2] **C09B** *29/36;* **D06P** *1/18, 3/26, 3/54*

U.S. Cl. 260—156 **14 Claims**

1. A compound of the formula



where

A is cyano or carbamoyl,

R is hydrogen or alkyl of 1 to 3 carbon atoms,

R^1 is hydrogen, chlorine, bromine or nitro,

R^2 is hydrogen, chlorine, bromine, nitro, methyl, trifluoromethyl, sulfamoyl, N-monoalkyl- or N,N-dialkylsulfamoyl, where alkyl is of 1 to 4 carbon atoms, or a sulfonic acid phenyl ester, methylphenyl ester, chlorophenyl ester or methoxyphenyl ester group,

R^3 is selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms which is unsubstituted or substituted by hydroxyl, alkoxy of 1 to 8 carbon atoms, allyloxy, phenoxy, methylphenoxy, chlorophenoxy, methoxyphenoxy, or optionally substituted arylsulfonyl; benzyl; phenylethyl; cyclohexyl; phenyl which is unsubstituted or substituted by chlorine, bromine, nitro, methyl, ethyl, methoxy, ethoxy or phenoxy; naphthyl; pyridyl; thienyl; furyl; and

$$-X-(O-Y)_n-OT$$

wherein

X is alkylene of 1 to 3 carbon atoms,

Y is alkylene of 2 or 3 carbon atoms,

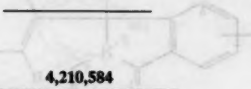
n is 1 or 2,

T is hydrogen, alkyl of 1 to 4 carbon atoms, benzyl, phenylethyl, phenyl or tolyl,

B^1 is hydrogen, alkyl of 1 to 8 carbon atoms, alkyl of 2 to 8 carbon atoms which is substituted by hydroxyl, alkoxy of 1 to 8 carbon atoms, phenoxy, tolyloxy, phenyl, alkanoyloxy of 1 to 8 carbon atoms, C_1 to C_4 alkoxycarbonyl, C_1 to C_4 alkylaminocarbonyloxy or phenylaminocarbonyloxy, or cyclohexyl, norbornyl, allyl, phenyl, tolyl or chlorophenyl, or

$$-Y-(O-Y)_n-OT \text{ and}$$

B^2 is hydrogen or alkyl of 1 to 4 carbon atoms which is unsubstituted or substituted by hydroxy or by alkoxy of 1 to 4 carbon atoms.



4,210,584
VINDESINE SYNTHESIS

Gloria C. Paschal, Mooresville, and Gerald L. Thompson, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

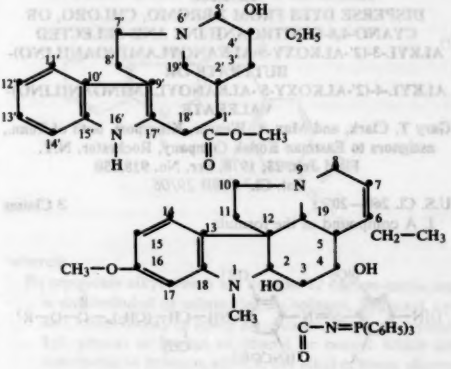
Filed Jan. 15, 1979, Ser. No. 3,442

Int. Cl.[2] **C07D** *519/04*

U.S. Cl. 260—244.4 **6 Claims**

1. The process which comprises the steps of reacting 4-desacetyl VLB C-3 carboxhydrazide with a nitrite in the presence of acid in an inert solvent to form 4-desacetyl VLB C-3 carboxazide, reacting said carboxazide with triphenylphosphine to yield 4-desacetyl VLB C-3 N-(triphenylphosphoranyl)carboximide and then reacting said iminophosphorane of 4-desacetyl VLB carboxylic acid with acid to yield vindesine.

6. A compound of the formula



4,210,585
PROCESS FOR PREPARING 9H-DIBENZ[c,f]IMIDAZO[1,2-a][1]AZEPIN-9-ONES

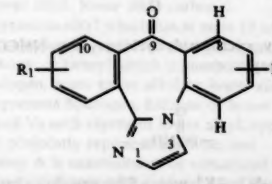
William J. Houlihan, Mt. Lakes, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 907,951, May 22, 1978. This application Jun. 18, 1979, Ser. No. 49,330

Int. Cl.[2] **C07D** *487/04*

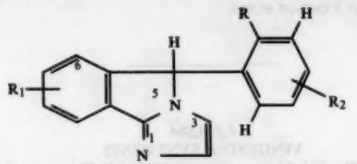
U.S. Cl. 260—245.6 **2 Claims**

1. A process for preparing a compound of the formula



(II)

which comprises treating a compound of the formula



(III)

where

R_1 represents H, mono or dichloro, or mono or difluoro,

R_2 represents H, chloro, fluoro, alkyl of 1–3 carbon atoms, alkoxy of 1–3 carbon atoms or trifluoromethyl, and

R represents chloro or fluoro, in inert solvent with an alkali metal hydride and oxygenating the resulting product.

4,210,586

DISPERSE DYES FROM 2-BROMO, CHLORO, OR CYANO-4,6-DINITROANILINE AND SELECTED ALKYL-3-(2'-ALKOXY-5-ALKANOYLAMINOANILINO)-BUTYRATE OR ALKYL-4-(2'-ALKOXY-5'-ALKANOYLAMINOANILINO)-VALERATE

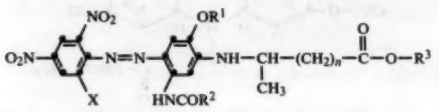
Gary T. Clark, and Max A. Weaver, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,250

Int. Cl.[2] C09B 29/06

U.S. Cl. 260—207.1 **3 Claims**

1. A compound of the formula



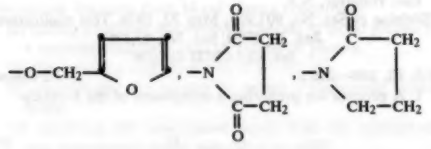
wherein

X is Br, Cl, or CN,

R^1 is straight or branched alkyl of 1 to 4 carbons,

R^2 is straight or branched alkyl of 1 to 4 carbons, or phenyl, n is 1 or 2, and

R^3 is straight or branched alkyl of 1 to 6 carbons, cyclohexyl, benzyl, phenyl or said alkyl substituted with —O—R^4, O—C_2H_4—R^4, —Cl,



phenyl, phenoxy, cyclohexyl, cyclohexyloxy, NHCO—R^4, $N(R^4)_2$, acyloxy,

—S—R^4, or —SO_2—R^4, where R^4 is straight or branched alkyl of 1 to 4 carbons.

4,210,587

7-ACYLAMINO-3-[1-[2-(CARBOXYMETHYLAMINO)ETHYL]TETRAZOL-5-YLTHIO METHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

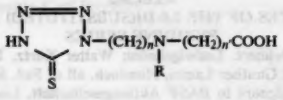
David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 809,585, Jun. 24, 1977, Pat. No. 4,117,125. This application Jul. 3, 1978, Ser. No. 921,921

Int. Cl.[2] C07D 257/04

U.S. Cl. 548—251 **3 Claims**

1. A compound of the formula:



in which:

R is lower alkyl having from one to four carbons or hydrogen;

n is two to four;

n' is one to four; or its alkali metal and ammonium salts.

4,210,588

SILICON-MODIFIED IMIDYL-PHTHALIC ACID DERIVATIVES

Roland Darms, Therwil; Siegfried Wyler, Dornach, both of Switzerland, and Gerd Greber, Bad Vöslau, Austria, assignors to Ciba-Ceigy Corporation, Ardsely, N.Y.

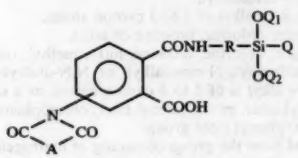
Filed Aug. 30, 1978, Ser. No. 938,169

Claims priority, application Switzerland, Sep. 9, 1977, 11068/77

Int. Cl.[2] C07D 209/08, 209/96; C09J 1/00

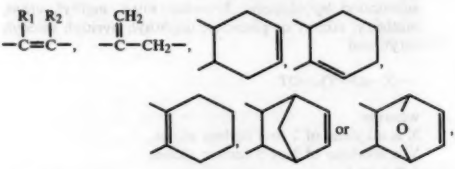
U.S. Cl. 260—326 E **4 Claims**

1. A compound of the formula I

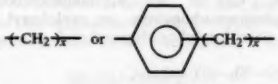


(I)

and its corresponding cyclised imide derivative, in which A is a radical of the formula



R_1 and R_2 independently of one another are hydrogen or methyl, Q is methyl, phenyl or —OQ_3, Q_1, Q_2 and Q_3 independently of one another are alkyl with 1–6 C atoms or phenyl, R is



and, x is an integer from 2 to 4.

4,210,589

METHOD OF PREPARATION FOR AROMATIC N-SUBSTITUTED HALO-SUBSTITUTED 2-PYRROLIDINONES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

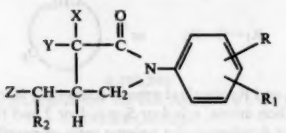
Division of Ser. No. 647,963, Jan. 9, 1976, Pat. No. 4,110,105, which is a continuation-in-part of Ser. No. 563,279, Mar. 28, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 895,207

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

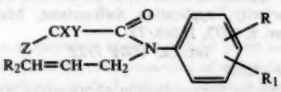
Int. Cl.[2] C07D *207/38*

U.S. Cl. 260—326.5 FL 6 Claims

1. The method of preparing monocyclic aromatic N-substituted halo-2-pyrrolidinones having the formula



in which X is hydrogen, chlorine or methyl; Y is hydrogen, chlorine or bromine, Z is chlorine or bromine; R_2 is alkyl or hydrogen; R is hydrogen, alkyl having 1–4 carbon atoms, inclusive, acetyl, chlorine, bromine, fluorine, iodine, trifluoromethyl, nitro, cyano, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, trifluoromethylthio, trifluoromethylsulfinyl, trifluoromethylsulfonyl, pentafluoropropionamido, or 3-methylureido; and R_1 is hydrogen, alkyl, chlorine or trifluoromethyl, which comprises the the steps of heating an N-alkenyl haloacyl amide of the formula



in which X, Y, Z, R, R_1 and R_2 are as above defined, in the presence of a catalytic amount of ferrous ion and recovery of the resulting product.

4,210,590

REDUCTION OF INDOLE COMPOUNDS TO INDOLINE COMPOUNDS

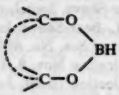
Bruce E. Maryanoff, Solebury Township, Bucks County, and David F. McComsey, Philadelphia, both of Pa., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Filed Jan. 6, 1978, Ser. No. 867,564

Int. Cl.[2] C07D *209/04, 209/94, 487/04*

U.S. Cl. 260—326.11 R 12 Claims

1. A process for selectively reducing an indole compound to the corresponding indoline compound which comprises causing an indole compound to react with a borane reagent in the presence of trifluoroacetic acid, said indole compound being characterized by having a basic nitrogen bearing group and also by the absence of an electron-withdrawing group substituted directly on the 2-position of the indole nucleus and thereby being one capable of forming an indolenium ion in the trifluoroacetic acid containing reaction medium, and said borane reagent being either (a) a neutral complex of BH_3 with an organic Lewis base and selected from the group consisting of BH_3.THF, BH_3.Pyridine and $BH_3.S(CH_3)_2$ in THF, or (b) a dioxyborane represented by the structure



and selected from the group consisting of catechol borane, bis(trifluoroacetoxy)borane and a compound formed in situ from said complex of BH_3 with an organic Lewis base and trifluoroacetic acid.

4,210,591

INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

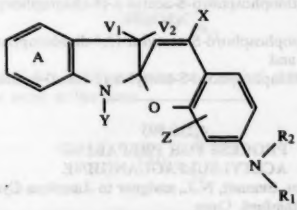
Filed Jan. 21, 1977, Ser. No. 761,042

Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.[2] C07D *209/04*

U.S. Cl. 260—326.11 S 6 Claims

1. An indolinospirane compound of the formula



(I)

wherein

R_1 represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower lakoxy or lower alkyl-carbonyloxy, or cycloalkyl, phenyl or benzyl or phenyl or benzyl which are substituted by halogen, nitro, lower alkyl or lower alkoxy,

R_2 represents hydrogen, alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkylcarbonyloxy, or cycloalkyl or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

X represents phenyl, benzyl or phenyl or benzyl which are substituted in the aromatic nucleus thereof by halogen, lower alkyl, lower alkoxy or

wherein T_1 and T_2 independently represent hydrogen, lower alkyl, lower alkyl-carbonyl,

Y represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl,

V_1 and V_2 each represent lower alkyl, cycloalkyl or benzyl, or conjointly represent alkylene, and

the ring A is unsubstituted or substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy, amino, lower alkylamino or N-lower alkyl-carbonylamino.

4,210,592

THIOPHOSPHORO-S-ACYLATED HYDRAZONES

Joseph H. Lesser, Beer Sheva, Israel, assignor to Makhteshim Chemical Works Ltd., Beer Sheva, Israel

Continuation-in-part of Ser. No. 699,685, Jun. 25, 1976, abandoned. This application Nov. 8, 1977, Ser. No. 850,091
Claims priority, application Israel, Jun. 27, 1975, 47591
Int. Cl.[2] C07D *307/46;* C07F *9/165*
U.S. Cl. 260—347.2 14 Claims

1. A compound selected from the group consisting of
O,O-diethylthiophosphoro-S-acetyl-α-phenylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-phenylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α,α-dimethyl-hydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-methyl-α-t-butylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-(3,4-dichlorophenyl)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-(2-furan)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methylhydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-ethylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-methyl-α-iso-propyl-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-methyl-α-iso-propylhydrazone;
O,O-dimethylthiophosphoro-S-acetyl-α-(4-chlorophenyl)-hydrazone;
O,O-diethylthiophosphoro-S-acetyl-α-(3,4-dichlorophenyl)-hydrazone; and
O,O-dimethylthiophosphoro-S-acetyl-α-(2-furan)-hydrazone.

4,210,593

PROCESS FOR PREPARING ACETYLSULFAGUANIDINE

Imre A. Halmos, Summit, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 4, 1978, Ser. No. 902,597
Int. Cl.[2] C07C *143/58*
U.S. Cl. 397.7 R 4 Claims

1. A process for preparing acetylsulfaguanidine which comprises: heating ammonium acetylsulfanilylcyanamide to about 150°-200° C. to form acetylsulfaguanidine; and cooling and recovering the same, the improvement comprising, preliminary to the heating step:
adding a concentrated aqueous solution of ammonium acetylsulfanilylcyanamide as a thin layer to a container;
subjecting said layer to microwave radiation for between about 30-90 seconds to form a soft glassy sheet of essentially anhydrous ammonium acetylsulfanilylcyanamide having a temperature between about 70°-130° C.; and
removing said sheet from said microwave radiation.

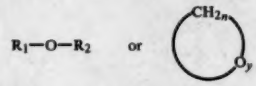
4,210,594

PROCESS FOR SEPARATING ESTERS OF FATTY ACIDS

Ted J. Logan, and David C. Underwood, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 858,484, Dec. 8, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,759
Int. Cl.[2] C09F *5/10;* C11B *3/00*
U.S. Cl. 260—428.5 38 Claims

1. A continuous process for separating an ester of a more unsaturated fatty acid from a feed mixture comprising an ester of a more unsaturated fatty acid and an ester of a less unsaturated fatty acid, which process comprises the steps of:
(a) contacting said mixture in the fluid state, with a solid adsorbent, thereby selectively adsorbing said ester of a more unsaturated fatty acid;
(b) removing from the adsorbent a raffinate stream enriched (relative to the composition of the original mixture) in said ester of a less unsaturated fatty acid;
(c) contacting said adsorbent with a fluid desorbent material to effect desorption of said ester of a more unsaturated fatty acid from said solid adsorbent; and
(d) removing from said solid adsorbent an extract stream enriched (relative to the composition of the original mixture) in said ester of a more unsaturated fatty acid;
wherein said adsorbent comprises an X or Y zeolite containing at cation exchangeable sites at least one cation selected from the group consisting of metals of Group IA of the Periodic Table of Elements, magnesium, calcium, strontium, barium, silver, gold, zinc, nickel, copper, cadmium and mercury and combinations thereof; wherein said fluid desorbent material consists essentially of a mixture of one or more paraffinic hydrocarbons containing from about 5 to about 12 carbon atoms, and one or more ethers having the formula



wherein R_1 and R_2 are alkyl groups containing from about 2 to about 6 carbon atoms, n is 4 or 5, y is 1 or 2 and the sum of n and y is 5 or 6, wherein the volume ratio of paraffinic hydrocarbon to ether is from about 9:1 to 1:9 and wherein contact between solid adsorbent and fluids in said process is effected by means of continuous countercurrent flow fluid-solid contact.

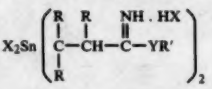
4,210,595

PROCESS FOR THE PRODUCTION OF ORGANO-TIN COMPOUNDS

Hermann O. Wirth, Bensheim, and Hermann W. Wehner, Zwingenberg, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 900,546, Apr. 27, 1978, Pat. No. 4,158,669. This application Mar. 28, 1979, Ser. No. 24,846
Claims priority, application Switzerland, May 6, 1977, 5708/77; Nov. 9, 1977, 13665/77
Int. Cl.[2] C07F *7/22*
U.S. Cl. 260—429.7 10 Claims

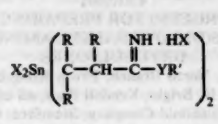
1. A process for the production of organotin compounds of the formula



wherein
X represents a chlorine, bromine, or iodine atom,
Y represents an oxygen atom,
R is selected from the group consisting of a hydrogen atom and alkyl, and
R′ represents a hydrocarbon group of aliphatic or aromatic character, or said group substituted by a hydroxyl, thiol, alkoxy, alkylthio, carboxyl or carboalkoxy group, which comprises
reacting, at −30° C. to +150° C., metallic tin with hydrogen chloride, hydrogen bromide or hydrogen iodide and an unsaturated nitrile of the formula

in a reactant medium consisting of an alcohol (R′OH) wherein the molar ratio of alcohol to nitrile is between 1.2:1 to 1:1.

10. A process for the production of organotin compounds of the formula



wherein X, R and R' are defined as in claim 1 and Y is a sulfur atom, which comprises

reacting, in essentially stoichiometric molar amounts, a compound made by the process according to claim 1 with a mercaptan (R'SH).

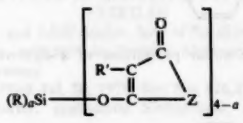
4,210,596

SILYL ETHERS OF 1,3-DICARBONYL CYCLIC COMPOUNDS

James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 24, 1978, Ser. No. 927,288
Int. Cl.² C07F 7/18
U.S. Cl. 556—436 5 Claims

1. 1,3-silyl carbonyl ethers of the formula,



where R is a monovalent organic radical of up to 13 carbon atoms selected from the class consisting of aryl radical, halogenated aryl radicals, aralkyl radicals, alkyl radicals, alkenyl radicals and cyclo alkyl radicals, R^1 is selected from hydrogen, halogen and R radicals, Z is a divalent organic radical of up to 13 carbon atoms selected from alkylene, cycloalkylene and arylene, a is a whole number having a value of from 0 to 2 inclusive.

4,210,597

PREPARATION OF OXYGENATES FROM CARBON MONOXIDE AND HYDROGEN

Yun-Yang Huang, Troy, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 14, 1979, Ser. No. 38,470
Int. Cl.² C07C 27/06
U.S. Cl. 260—449 R 3 Claims

1. A process for producing oxygenated compounds which comprises contacting a gaseous mixture of carbon monoxide and hydrogen with a catalyst comprising rhodium, tungsten, and an oxygenate-promoting amount of an alkali metal, at reaction conditions correlated to achieve optimal selectivity for oxygenated compounds, these conditions comprising:

(a) a temperature of from about 250° to about 350° C.;

(b) a pressure of from about 100 to about 5,000 psig;

(c) a space velocity of from 200 to 20,000; and

(d) a hydrogen to carbon monoxide ratio of from 0.1 to 4.

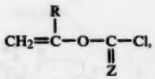
4,210,598

PROCESS FOR THE INDUSTRIAL SYNTHESIS OF VINYL AND ISOPROPENYL CHLOROFORMATE AND THIOCHLOROFORMATE

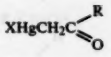
Marc D. Piteau, Mennecy, and Thierry A. Malfroot, Saint Germain les Corbeil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Feb. 10, 1978, Ser. No. 876,688
Claims priority, application France, Feb. 25, 1977, 77 05641
Int. Cl.² C07C 154/00, 68/02
U.S. Cl. 260—455 B 10 Claims

1. Process for the synthesis of a compound of the general formula



in which R=H or CH_3 and Z—O or S, which comprises reacting a chloride, which is a member selected from the group consisting of carbonyl chloride and thiocarbonyl chloride, with a mercury salt having the formula:



in which R is a hydrogen atom or a methyl group and X is a chlorine atom or the same

group, in a solvent medium comprising a solvent of dielectric constant greater than 10 at 20° C. or a mixture of solvent having a dielectric constant which is greater than 10 at 20° C., at a temperature between +80° C. and −80° C.

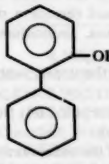
4,210,599

SYNTHESIS OF BOROXAROPHENANTHRENES

Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 896,268, Apr. 14, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,410
Int. Cl.² C07F 5/04
U.S. Cl. 260—462 C 16 Claims

1. In an improved process for synthesizing a boroxarophenanthrene, which comprises the steps of reacting gaseous BCl_3 with o-phenylphenol to form an intermediate product having the formula

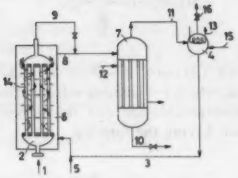


heating this intermediate in the presence of an aluminum halide and treating the product thus obtained with the appropriate reagent to obtain the said boroxarophenanthrene, the improvement whereby the BCl_3 is added to a liquid hydrocarbon slurry of o-phenylphenol maintained at a temperature of from about 0° C. to about 80° C.

4,210,600
METHOD FOR THE PREPARATION OF UREA WITH A HIGH-YIELD REACTOR

Umberto Zardi, San Donato Milanese, Italy, assignor to Snamprogetti, S.p.A., Milan, Italy

Continuation of Ser. No. 845,371, Oct. 25, 1977, abandoned.
This application May 21, 1979, Ser. No. 40,863
Claims priority, application Italy, Oct. 28, 1976, 28779 A/76
Int. Cl.[2] C07C *126/02*
U.S. Cl. 260—555 A 3 Claims



1. The method of producing urea with a high-yield reactor having a first reaction zone, a second reaction zone and a heat exchange surface separating said first reaction zone from said second reaction zone and operated at elevated temperatures and at sufficient pressures to maintain the reactants in the liquid phase, the pressure in the first reaction zone being in the range between the pressure in the second reaction zone and 200 atmospheres above said second reaction zone pressure, which includes the steps of:

(a) synthesizing a quantity of urea by feeding to said first reaction zone a stoichiometric mixture of NH_3 and CO_2 together with a portion of excess recycle NH_3 sufficient to provide an NH_3/CO_2 ratio in the range of from 2.5 to 5 in said first reaction zone feed so that an exothermic reaction generating heat in excess of the amount required to synthesize said quantity of urea is carried out in said first reaction zone;

(b) synthesizing a further quantity of urea through an endothermic reaction by feeding to said second reaction zone ammonium carbamate condensate together with the balance of said excess recycle NH_3 to provide an NH_3/CO_2 ratio in the range of 3.5 to 8 and withdrawing from the first reaction zone to the second reaction zone through said heat exchange surface sufficient heat to maintain the endothermic reaction in the second reaction zone;

(c) withdrawing from said reactor a stream containing an aqueous solution of urea, ammonium carbamate, and excess recycle NH_3;

(d) separating urea from the stream withdrawn through step (c);

(e) withdrawing excess recycle NH_3 from the stream withdrawn through step (c);

(f) supplying a portion of the excess recycle NH_3 withdrawn through step (e) to the feed for the first reaction zone in step (a);

(g) forming ammonium carbamate condensate from said ammonium carbamate; and

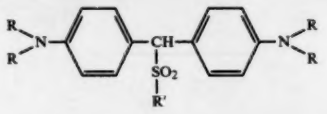
(h) supplying said ammonium carbamate condensate and the balance of the excess recycle NH_3 withdrawn through step (e) to the feed for the second reaction zone in step (b).

4,210,601
PROCESS FOR PREPARING ARYL[4,4'-BIS(DI-LOWERALKYL-AMINO)BENZHYDRYL]SULFONES

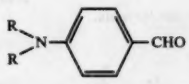
John P. Dundon, North Branch; Erwin Klingsberg, Mountainside, and John H. Bright, Kendall Park, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 22, 1979, Ser. No. 5,251
Int. Cl.[2] C07C *85/20*
U.S. Cl. 260—570 D 6 Claims

1. A process for the preparation of aryl[4,4'-bis-(di-loweralkylamino)benzhydryl] sulfones (I)

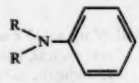


wherein each R is alkyl of 1 to 4 carbon atoms and R' is phenyl, naphthyl, alkyl-, chloro-, nitro-, or alkoxy-substituted phenyl or naphthyl, which comprises condensing, in the presence of essentially one molar proporation of urea, essentially one molar proportion of a 4-di(loweralkylamino)benzaldehyde (II),



(II)

essentially one molar proportion of a di(loweralkyl)aniline (III),



(III)

and essentially one molar proportion of a salt of an aryl sulfinic acid (IV),

$$R'—SO_2M \qquad (IV)$$

wherein R' is described hereinabove and M is an alkali or alkaline earth metal, magnesium, ammonium, or a salt-forming amine, in an aqueous acidic medium containing at least about 70°–95° C. for about 2 to 5 hours; adjusting the pH of the resulting reaction mixture to 5.5 to 7 by the addition of a strong inorganic base and extracting the mixture at an elevated temperature with an aromatic hydrocarbon solvent in which said (I) is soluble; separating the organic phase from the aqueous phase; and isolating said (I) from the organic phase.

4,210,602
PROCESS FOR THE PREPARATION OF ASYMMETRICAL N-PHENYL-N'-SUBSTITUTED PARA-PHENYLENE DIAMINES

Manfred Bergfeld, Erlenbach, and Hans G. Zengel, Kleinwallstadt, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Feb. 23, 1979, Ser. No. 14,673
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816460
Int. Cl.[2] C07C *85/08, 85/11*
U.S. Cl. 260—576 11 Claims

1. In an improved process for the preparation of asymmetrical N-phenyl-N'-substituted para-phenylene diamines by the reductive alkylation of para-nitroso-diphenylhydroxylamine

with an aldehyde or a ketone in the presence of hydrogen and a hydrogenation catalyst, the improvement comprising utilizing as the hydrogenation catalyst (1) one member selected from the group consisting of palladium and platinum sulfide, in an amount less than 1%, by weight based on the weight of para-nitroso-diphenylhydroxylamine, and (2) activated carbon with a specific surface area of at least 700 square meters per gram and an ash content of less than 7.5%, by weight, in an amount from about 10 to about 200%, by weight based on the weight of para-nitroso-diphenylhydroxylamine.

4,210,603

PRODUCTION OF CYCLIC HYDROCARBONS FROM N-BUTENES

John L. Cihonski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Apr. 16, 1979, Ser. No. 30,539
Int. Cl.[2] C07C *85/11, 15/10, 3/44*
U.S. Cl. 260—580 **6 Claims**

1. A process for the production of cyclic hydrocarbons from light acyclic hydrocarbons which comprises contacting n-butenes with an oxidized Group VIII metal catalyst in the presence of molecular oxygen at a temperature between about 130° C. and 500° C. and a pressure between about 1 and 200 psi to convert the n-butenes to vinylcyclohexene and ethylbenzene with a conversion efficiency of at least 80 weight percent.

4,210,604

PROCESS FOR PREPARING SECONDARY AMINES FROM MIXTURES OF ALIPHATIC ALCOHOLS AND NITRILES

Heinz Müller, and Adolf Becker, both of Burgkirchen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,279
Claims priority, application Switzerland, Jul. 25, 1977, 9196/77
Int. Cl.[2] C07C *85/06, 85/12*
U.S. Cl. 260—583 R **8 Claims**

1. In a process for the manufacture of secondary aliphatic amines from aliphatic nitriles and aliphatic alcohols in the liquid phase in the presence of hydrogenation-dehydrogenation catalysts as elevated temperatures and removing water by passing hydrogen gas through the reaction mixture of alcohols and nitriles by contacting at temperatures of from about 120 to about 260° C. and under conditions of virtually atmospheric pressure a primary or secondary aliphatic alcohol of the formula R_1OH, wherein R_1 is a straight-chain or branced alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radial having from 8 to 26 C atoms, or a radical of the formula $R_2(OX)_m$— having a molecular weight of at least 130, wherein R_2 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 1 to 26 C atoms, m is a number of from 1 to 20, X is an alkylene radical selected from the group $—CH_2CH_2—$, $—CH(CH_3)—CH_2—$, or $—CH_2—CH(CH_3)—$ including combinations thereof, or mixtures of said alcohols R_1OH, with an aliphatic nitrile of the formula $R_3—CN$, wherein R_3 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 8 to 26 C atoms or a radical of the formula $R_4(OX)_n—O(CH_2)_p—$ having a molecular weight of at least 130, wherein R_4 is an alkyl, alkenyl or ethylenically multi-unsaturated hydrocarbon radical having from 1 to 26 C atoms, n is a number of from 1 to 20 or 0, p is 1 or 3, X is a radical as defined above including combinations thereof, or mixtures of said nitriles $R_3—CN$ in a molar ratio of alcohol: nitrile of from 90:10 to 10:90, passing and recycling at least 2 moles of hydrogen per mole of said nitrile through the reaction mixture, the improvement which comprises maintaining an ammonia concentration of from 3 to 75% by volume, calculated on the sum of hydrogen and ammonia in the circulating gas, during the entire reaction period.

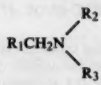
4,210,605

PROCESS FOR THE PREPARATION OF ALIPHATIC AMINES

Fumiro Hoshino; Hiroshi Kimura, and Kazuhito Matsutani, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

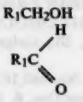
Filed Feb. 12, 1979, Ser. No. 11,751
Claims priority, application Japan, Mar. 16, 1978, 53-30149
Int. Cl.[2] C07C *85/02, 83/00*
U.S. Cl. 260—585 B **17 Claims**

1. In a process for the preparation of aliphatic amine having the formula:



(IV)

wherein R_1 is a linear or branched, saturated or unsaturated aliphatic group having 7 to 23 carbon atoms, and R_2 and R_3 each is hydrogen or a linear or branched, saturated or unsaturated aliphatic group having 1 to 24 carbon atoms,
which comprises reacting an aliphatic alcohol or an aliphatic aldehyde having the formulas:



(I)
(II)

wherein R_1 is the same as defined above, with ammonia or a primary or secondary aliphatic amine having the formula:

(III)

wherein R_2 and R_3 are the same as defined above, at a temperature of 100° to 350° C. in the presence of a catalyst, the improvement which comprises: said catalyst is a homogeneous colloidal catalyst prepared by reducing with hydrogen or other reducing agent, a catalyst material selected from the group consisting of (1) component A, wherein component A is a copper salt or silver salt of a carboxylic acid or a mixture of said salts, (2) a mixture of said component A and component B, wherein component B is one or a mixture of two or more salts of carboxylic acids with one or more elements selected from the group consisting of the elements of group VIII of the Periodic Table of The Elements, manganese and zinc, and (3) a mixture of said component A, said component B and component C, wherein component C is one or a mixture of two or more salts of carboxylic acids with one or more elements selected from the group consisting of alkali metals and alkaline earth metals, said carboxylic acids having from 5 to 36 carbon atoms.

4,210,606

DECOMPOSITION OF CUMENE HYDROPEROXIDE WITH A HALOGEN-SUBSTITUTED THIOPHENOL CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jun. 15, 1979, Ser. No. 48,743
Int. Cl.[2] C07C *45/00, 37/08*
U.S. Cl. 568—385 **8 Claims**

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent

cumene hydroperoxide with a catalytic amount of thiophenol having from one to five ring substituents selected from fluorine, chlorine, bromine and mixtures thereof at a temperature between about 25° and about 110° C.

4,210,607

DECOMPOSITION OF CUMENE HYDROPEROXIDE USING A STABLE NITROSONIUM OR NITRONIUM SALT AS THE CATALYST

Richard G. Austin, Churchill; Wayne R. Pretzer, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Jun. 20, 1979, Ser. No. 50,469

Int. Cl.² C07C *45/00, 37/08*

U.S. Cl. 568—385 **8 Claims**

1. The method for cleaving cumene hydroperoxide at high selectivity to phenol and acetone which comprises contacting a solution comprising about 0.1 to about 20 weight percent cumene hydroperoxide with a catalytic amount of a salt comprising a cation selected from nitrosonium and nitronium and an anion selected from tetrafluoroborate, hexafluorophosphate, hexachlorostibnate and hexafluoroarsenate at a temperature between about 25° and about 110° C.

4,210,608

MANUFACTURE OF LINEAR PRIMARY ALDEHYDES AND ALCOHOLS

Paul A. Pinke, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 469,162, May 13, 1974, Pat. No. 3,959,386. This application Dec. 8, 1975, Ser. No. 638,881 The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.

Int. Cl.² C07C *45/10*

U.S. Cl. 568—451 **11 Claims**

1. A method of converting linear internal monoolefinic hydrocarbons possessing from 4 to 16 carbon atoms to linear primary aldehydes and alcohols which comprises treating said internal monoolefinic hydrocarbons in admixture with hydrogen and carbon monoxide and in contact with an aluminum catalyst selected from the group consisting of metallic aluminum, alkyl aluminum and alkyl aluminum hydride, and in contact with a Group VIII metal hydroformylation catalyst at a temperature of from about 25° to about 400° C. and at a pressure of from about 14 to about 14,000 pounds per square inch.

4,210,609

METHOD OF TREATING 1-NITROPROPANE

William A. Summers, Terre Haute, Ind.; Peter C. Markunas, Springfield, Ill., and Lois V. Faulkner, Daly City, Calif., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Aug. 23, 1978, Ser. No. 936,315

Int. Cl.² C07C *79/04*

U.S. Cl. 568—947 **5 Claims**

1. A process for decolorizing 1-nitropropane containing color bodies by passing it through a bed of alumina.

4,210,610

PROCESS FOR THE PREPARATION OF CHLOROARYLACETYLENE PRECURSORS

Edward T. Sabourin, Allison Park, and Charles M. Selwitz, Monroeville, both of Pa., assignors to Gulf Research and Development Company, Pittsburgh, Pa.

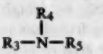
Filed Dec. 7, 1978, Ser. No. 967,247

Int. Cl.² C07C *17/00, 29/00*

U.S. Cl. 260—649 R **17 Claims**

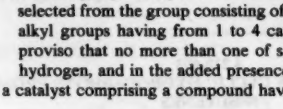
1. A process for the production of a chloroaryl hydroxy substituted acetylene which comprises:

reacting a chloroarylbromide with a substituted terminal acetylene compound containing at least three carbon atoms and an hydroxy group on the carbon atom adjacent to the acetylene group in the presence of a solvent comprising a compound having the formula:



where R_3, R_4, and R_5 can be the same or different and are selected from the group consisting of hydrogen and lower alkyl groups having from 1 to 4 carbon atoms with the proviso that no more than one of said R groups can be hydrogen, and in the added presence of:

a catalyst comprising a compound having the formula:



where x can be Br, I, or Cl;

and where R_6, R′ and R″ can be the same or different and are selected from the group consisting of phenyl, substituted phenyl and alkyl groups having from 1 to 4 carbon atoms;

and a promotor comprising cuprous iodide; to produce HBr and the resultant chlorophenyl hydroxy substituted acetylenes.

11. A process in accordance with claim 1 wherein the resultant chloroarylhydroxy substituted acetylene compound is converted to a chloroarylacetylene by reacting said chloroarylhydroxy substituted acetylene compound with an alkali metal hydroxide in the presence of a solvent for said acetylene compound.

4,210,611

HALOGENATED HYDROCARBONS, USEFUL AS INSECTICIDE INTERMEDIATES, AND METHODS FOR THEIR PREPARATION

John Crosby, and Bernard W. H. Terry, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

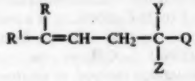
Filed May 18, 1979, Ser. No. 40,455

Claims priority, application United Kingdom, May 25, 1978, 22429/78

Int. Cl.² C07C *17/28*

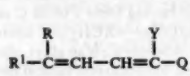
U.S. Cl. 260—653.5 **5 Claims**

1. A halogenated hydrocabon having the general formula:



(I)

and a halogenated hydrocarbon having the general formula:



(II)

and mixtures thereof, wherein

Y represents fluorine, chlorine or bromine,

R represents hydrogen or a lower alkyl group,

R^1 represents a lower alkyl group,

Z is Y or Q and

Q is $W(CF_2)_m$—in which W is hydrogen, fluorine or chlorine and

m is 1 or 2.

4,210,612

NOVEL POLYMERIC N-HETEROCYCLIC COMPOUNDS

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corp., Ardsley, N.Y.

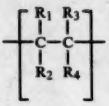
Filed Jul. 13, 1978, Ser. No. 924,417

Claims priority, application Switzerland, Jul. 19, 1977, 8915/77

Int. Cl.² C08L 75/04, 39/04, 77/00

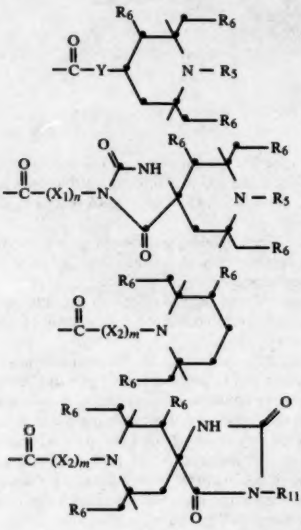
U.S. Cl. 525—204 11 Claims

1. A composition which comprises a plastic material containing a stabilizing amount of a stabilizer selected from the group of (1) a homopolymeric compound having the recurring structural unit of the formula I



(I)

in which R_1 is a group, containing an N-heterocyclic ring, of the formulae II, III, IV and V



(II)

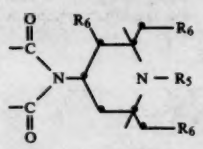
(III)

(IV)

(V)

in which R_5 is hydrogen, oxygen, C_1–C_{18} alkyl, C_3–C_8 alkenyl, C_3–C_6 alkynyl, C_7–C_{12} aralkyl, C_2–C_{21} alkoxyalkyl, an aliphatic acyl group having 1–4 C atoms or one of the groups $—CH_2COOR_7$ or $—COOR_8$, in which R_7 is C_1–C_{12} alkyl, C_3–C_8 alkenyl, phenyl, C_7–C_8 aralkyl or cyclohexyl and R_8 is C_1–C_{12} alkyl, phenyl, benzyl or cyclohexyl, and R_6 is hydrogen or C_1–C_4 alkyl and Y is —O— or

in which R_9 is hydrogen, C_1–C_{12} alkyl, C_7–C_{12} aralkyl or cyclohexyl, and X_1 is a group of the formula $—O—CH(R_{10})—CH_2—$ (VI), in which R_{10} is hydrogen, methyl, ethyl, phenoxymethyl or phenyl, and n is 0 or 1, and X_2 is a group of the formula VI, in which R_{10} is as defined above, or a group of the formula $—O—CH_2—CH(OH)—CH_2—$ (VII), and m is 0 or 1, and R_{11} is C_1–C_{18} alkyl or is cyclohexyl, phenyl or benzyl which are unsubstituted or substituted by C_1–C_4 alkyl or C_1–C_4 alkoxy, and R_2 is hydrogen or C_1–C_4 alkyl, and, if R_2 and R_4 are hydrogen, R_1 and R_3 together form a group of the formula VIII



(VIII)

in which R_5 and R_6 are as defined above and R_3 is hydrogen or C_1–C_2 alkyl and R_4 is hydrogen or methyl, and (2) a copolymer of (1) with a compound containing at least one polymerisable double bond, the molar ratio of the component of the formula I to the co-component being up to 1:10.

4,210,613

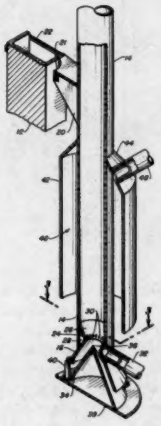
WATER TREATING DEVICE

William G. Webb, 6564 Ralston St., Ventura, Calif. 93003

Filed Apr. 6, 1978, Ser. No. 894,055

Int. Cl.² B01F 3/04

U.S. Cl. 261—120 1 Claim



1. An aeration device for adding gases to a liquid medium comprising:

an elongate hollow tube;

support means for supporting said elongate tube upright in said liquid;

a bell-shaped member on the lower end of said tube;

said bell-shaped member terminating inside said tube in a throat of smaller cross-section than said tube;

an annular ring flaring outwardly from said bell-shaped member throat into abutment with the inside surface of said tube forming an annular chamber between the tube, bell-shaped member and ring;

a plurality of spaced apertures in said ring positioned substantially on the peripheral edge of said throat;

supply means for supplying a gas to said chamber;

a cone positioned beneath the entrance to said bell-shaped member;

whereby the gas discharged through the apertures in said

skirt causes a swirling stream of liquid to rise through said tube;

a collar attached to the outside of said tube forming a cavity between the outside of the tube and the inside of said collar; and

gas supply means for supplying a gas to said cavity whereby said collar can be used as a flotation collar for maneuvering said aeration device.

4,210,614

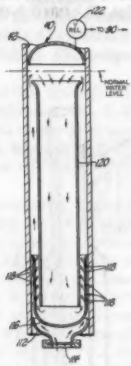
PASSIVE CONTAINMENT SYSTEM

Frank W. Kleimola, Jackson, Mich., assignor to Nucledyne Engineering Corp., Reed City, Mich.

Division of Ser. No. 548,744, Feb. 10, 1975, Pat. No. 4,050,983, and a continuation-in-part of Ser. No. 383,485, Jul. 30, 1973, Pat. No. 3,984,282, which is a continuation of Ser. No. 61,063, Aug. 5, 1970, abandoned. This application May 18, 1977, Ser. No. 798,078

Int. Cl.[2] B01F *3/04;* G21C *15/12*

U.S. Cl. 261—124 7 Claims



1. Energy absorbing and quenching apparatus for use in absorbing thermal energy from a vaporized fluid contained within a chamber of a confining structure, said apparatus comprising tank means, cooling liquid contained within said tank means, said cooling liquid being of such a volumetric displacement within said tank means as to result in a selected freeboard space within said tank means, passage means formed in said tank means and effective for communicating between said chamber and a lower disposed portion of said cooling liquid within said tank means, pressure responsive valve means operatively closing said passage means and effective for preventing said cooling liquid to flow from said tank means through said passage means to said chamber during normal conditions and prior to said vaporized fluid attaining a first predetermined pressure within said chamber, said valve means being effective upon said vaporized fluid attaining said first predetermined pressure to open communication through said passage means as between said cooling liquid and said chamber thereby permitting said vaporized fluid to start to flow through said passage means and into said cooling liquid while maintaining said cooling liquid within said tank means to thereby transfer heat energy from said vaporized fluid to said cooling liquid and to develop steam within said freeboard space, and said cooling liquid being effective upon sufficient steam being formed within said freeboard space to flow out of said tank means through said passage means and into said chamber to provide quenching of said vaporized fluid within said chamber.

4,210,615

MANUFACTURE OF THERMOPLASTICS FIBRIDS

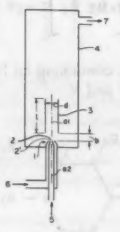
Peter Engler, Frankenthal; Otto Nagel, Neustadt, both of Fed. Rep. of Germany; Leo Unterstenhöfer, deceased, late of Limburgerhof, Fed. Rep. of Germany (by Ilse Unterstenhöfer, heiress-at-law); Hans Frielingsdorf, Bad Durkheim, Fed. Rep. of Germany; Heinz Berbner, Moerlenbach, Fed. Rep. of Germany; Heinz Mueller-Tamm, Ludwigshafen, Fed. Rep. of Germany, and Dieter Stoehr, Mutterstadt, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 472,828, May 23, 1974, abandoned. This application Dec. 31, 1975, Ser. No. 645,660

Claims priority, application Fed. Rep. of Germany, May 23, 1973, 2326143

Int. Cl.[2] B01J *2/06*

U.S. Cl. 264—11 8 Claims



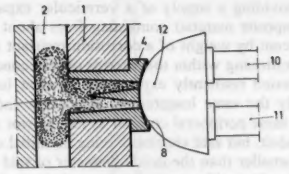
1. A process for the manufacture of thermoplastic fibrids having a length of from 100 to 50,000 μm, a thickness of from 1 to 1,000 μm, and a ratio of length to thickness of at least 10, which comprises:

1. dissolving a thermoplastic polymer in an organic solvent which is a solvent for said thermoplastic polymer only at elevated temperature;
2. ejecting said polymer solution through the outer aperture means of a concentric nozzle at a temperature of from 50° to 300° C.;
3. ejecting, simultaneously with the solution ejection of step 2, a jet of water at a velocity of from 5 m/s to 500 m/s and at a temperature between 20° and 200° C. below the temperature of the ejected solution, through a central orifice of said concentric nozzle, so that said solution is cooled by said water to a temperature below said elevated temperature of step 1, said central orifice having a diameter of from 1 to 10 mm while said outer aperture means which is disposed concentrically around said central orifice is in the form of an annular gap having a width of from 0.2 to 2.0 mm;
4. directing the solution and the water from said concentric nozzle into a tubular impulse exchange chamber having a length of from 2 to 30 times the mean inlet diameter of said chamber, said polymer solution being comminuted in said chamber by impingement with said water jet and under the influence of shearing forces so as to yield an energy dissipation density of 10 to 10^6 watts/liter, said chamber being filled with said water and being positioned so that the longitudinal axis of the chamber is in line with the axis of the nozzle, the distance from the nozzle to the impulse exchange chamber inlet being less than twice the mean inlet diameter of the impulse exchange chamber and the chamber having a mean inlet diameter of from 2 to 20 times the diameter of a circular area equal to the total area of the nozzle aperture means from which the polymer solution emerges; and
5. collecting the produced fibrids after their emergence from the impulse exchange chamber.

4,210,616
APPARATUS FOR FORMING PLASTIC

Helmut Eckardt, and Jürgen Ehritt, both of Hilchenbach-Allenbach, Fed. Rep. of Germany, assignors to Schloemann-Siemag AG., Düsseldorf, Fed. Rep. of Germany

Filed Mar. 16, 1978, Ser. No. 887,182
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705291
Int. Cl.[2] B29D *27/00*; B29F *1/10*
U.S. Cl. 264—45.1 4 Claims



1. Method of manufacturing molded parts of thermoplastic material with a compact skin and a porous core in a mold having a cavity, an injection channel connected to the cavity and a pair of fixed inlet channels extending from outer openings in the mold and intersecting within the injection channel at a point spaced from the cavity, said method comprising:

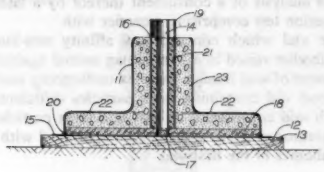
(a) injecting a first plastic mass into one of said openings until it partially fills the cavity, and

(b) injecting a second plastic mass containing a foaming agent into the other of said outer openings so that the second plastic merges with the first plastic mass in the injection channel and thereafter fills the entire mold cavity together with the first plastic mass.

4,210,617
METHOD OF CASTING AN INTEGRAL SLIDE GATE AND NOZZLE

Jan Bowman, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Aug. 3, 1978, Ser. No. 930,785
Int. Cl.[2] B28B *1/04*, *1/10*
U.S. Cl. 264—71 7 Claims

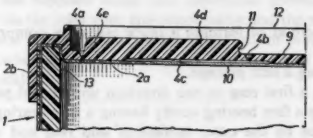


1. Method of casting an integral slide gate and nozzle assembly, said assembly having a channel therethrough for passage of molten metal, wherein (A) a casing conforming to the exterior sides and bottom of the assembly and having an opening in the bottom in the region of the channel exit, is placed upside down on a flat smooth plate to form a mold, (B) a first tube conforming to the channel to be formed in the assembly is placed within casing with one end fixed to plate and the other end extending through and fixed within the opening in the bottom of the casing, and (C) refractory castable material is placed within the mold, characterized in that (D) a measured amount of a first refractory castable of superior resistance to molten metal, sufficient in amount to form a layer at least 1 cm thick on the bottom of the mold, is placed in the mold, (E) a second tube, of diameter at least 2 cm greater than that of the first tube, is placed concentrically about the first tube, its lower end extending to the refractory cast in step (D), (F) a further amount of the first refractory castable is placed between the first and second tubes to form a collar of that refractory, (G) a second refractory castable, of lesser resistance to molten metal than the first refractory castable, is placed in the mold outside of the second tube, and (H) the second tube is removed from the mold.

4,210,618
METHOD OF MAKING TEAR OPENING DEVICES FOR CONTAINERS

Lars-Eric Piltz, Dalby; Bo T. Quist, Bjärred; Folke Kiellarson, Barsebäck; Siwer Månsson, Lund, and Bengt Nilsson, Södra Sandby, all of Sweden, assignors to AB Akerlund & Rausing, Sweden

Division of Ser. No. 721,866, Sep. 9, 1976. This application Apr. 2, 1979, Ser. No. 25,772
Claims priority, application Sweden, Sep. 12, 1975, 7510169; Sep. 12, 1975, 7510170
Int. Cl.[2] B29F *1/00*; B29D *31/00*
U.S. Cl. 264—130 4 Claims



1. A method for manufacturing an opening device for a package, which opening device comprises an outer wall portion and an inner layer of substantially gas-tight material, said outer wall portion including a first tearing notch defining an opening and a second tearing notch defining a grip tongue, an said outer wall and said inner layer being interconnected substantially over their total surfaces facing each other with said outer wall portion and said inner layer being separated within an area substantially under said grip tongue; the method comprising the steps of:

(a) coating the inner layer with an adhesion preventing coating within an area corresponding to said grip tongue; and

(b) connecting said inner layer to said substantially rigid outer wall portion.

4,210,619
CEMENT BONDED AGGLOMERATE CONTAINING BORON

George D. Haley, 12 Imperial Dr., Greenville, Pa. 16125

Filed Aug. 18, 1978, Ser. No. 934,926
Int. Cl.[2] B28B *1/14*
U.S. Cl. 264—140 4 Claims

1. A method for producing cement bonded agglomerates containing boron wherein the setting time of the agglomerated mixture is essentially unchanged which comprises the steps of:

(a) dissolving at least one water soluble boron compound selected from the group consisting of borax, colemanite, rasorite, boric oxide, or boric acid in water;

(b) adding a sufficient amount of at least one water soluble calcium compound selected from the group consisting of oxides and hydroxides of calcium to chemically react with substantially all of the dissolved boron compound to form a slurry;

(c) mixing the slurry with ferroalloy materials to be agglomerated and cement to form a flowable concrete mixture;

(d) next pouring the resulting mixture into a suitable mold; and

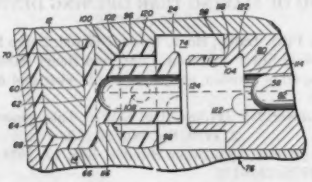
(e) allowing the mixture to set.

4,210,620

PIVOT ASSEMBLY MOLD METHOD

John W. von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Division of Ser. No. 805,739, Jun. 13, 1977, which is a continuation-in-part of Ser. No. 739,198, Nov. 5, 1976, abandoned. This application May 30, 1978, Ser. No. 911,001
Int. Cl.[2] B29D *31/00*
U.S. Cl. 264—163 17 Claims



1. A method of forming a pivot assembly comprising the steps of:

providing a first passage,

moving a first ring in one direction within said passage to define a first bearing cavity having a first bearing surface formed by the outer surface of said ring and a second bearing cavity having a second bearing surface formed by the inner surface of said ring,

forming a retaining cavity in communication with said second bearing cavity and spaced axially of said ring in the opposite direction,

moving a first core member spaced radially inwardly of said ring in said one direction to form a wall of said retaining cavity spaced radially inwardly of said second bearing surface,

introducing a plastic material into each of said cavities by first passing said material into one of said cavities and then passing plastic material from said one cavity through an aperture in said ring into the other of said cavities to form a first bearing in said first bearing cavity, a second bearing in said second bearing cavity, and a resilient member in said retaining cavity secured to said second bearing,

moving said core member in said opposite direction to enable said resilient member to flex radially inwardly,

moving said ring in said opposite direction, thus severing the plastic in said aperture from said first and second bearings, while first engaging said resilient member with said ring to flex said resilient member radially inwardly from said radial position intercepting said first bearing cavity and then disengaging said ring from said resilient member for enabling said resilient member to intercept axial movement of said first bearing in said opposite direction.

17. The method of molding a pivot assembly which comprises:

placing a ring member in a mold chamber to define a pair of spaced mold cavities inside and outside of said ring member;

filling said mold cavities with material to be molded, and positioning said material in said mold cavities to form resilient, interlocking means whereby said molded, pivotable mebers are normally prevented from separating from each other, and removing said ring member from between said pair of spaced mold cavities and pivotable members by temporarily deforming said interlocking means to allow the ring member to pass from between said molded pivotable members and thereafter permitting said interlocking resilient means to spring back into their interlocking position.

4,210,621

METHOD OF APPLYING VERMICULAR EXPANDED GRAPHITE COMPOSITE MATERIAL

John A. Snover, and R. Scott Caines, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1978, Ser. No. 889,309
Int. Cl.[2] B29C *17/06*
U.S. Cl. 264—516 10 Claims

1. A method of applying a vermicular expanded graphite composite material to the interior surface of a conduit comprising:

(a) providing a supply of a vermicular expanded graphite composite material containing from about 3 to about 50 percent by weight of a corrosion resistant resin;

(b) positioning within the interior of said conduit a pressure actuated resiliently expandable element having substantially the same longitudinal dimension and substantially the same peripheral contour as the interior surface of said conduit, but said element having an initial outside diameter smaller than the inside diameter of said conduit;

(c) charging said vermicular expanded graphite composite material into the interior of said conduit such that said composite material is loosely disposed within the annular space formed between the internal surface of said conduit and the outer surface of said pressure actuated resiliently expandable element;

(d) applying sufficient pressure within said expandable element to compress said composite material against the interior surface of said conduit; and

(e) isostatically compressing said composite material under sufficient pressure to form a substantially smooth fluid impervious lining of said composite material on the interior surface of said conduit.

4,210,622

KIT FOR ASSAY OF IMMUNE COMPLEXES

John F. Soothill, and Roland J. Levinsky, both of London, England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 831,349, Sep. 7, 1977, Pat. No. 4,141,965. This application Jul. 21, 1978, Ser. No. 926,736
Int. Cl.[2] G01N *33/16*
U.S. Cl. 422—61 4 Claims

1. A kit for use in the estimation of a human immune complex and analysis of a constituent thereof by a latex particle agglutination test comprising a carrier with

a first vial which contains low affinity non-human IgM antibodies raised in a non-human animal against the constituent of said human complex undergoing analyses; and

a second vial containing latex particles sufficiently coated with said constituent, so that said latex particles may be agglutinated when said particles are mixed with said IgM antibodies of the first vial.

4,210,623

FLUID COLLECTION APPARATUS

Philip J. Breno, Oregon; Robert N. Clark, Sylvania, and Frank E. Semersky, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 1, 1978, Ser. No. 901,948
Int. Cl.[2] B01D *33/00*; B01L *3/00*
U.S. Cl. 422—101 12 Claims

1. A fluid collection apparatus for collecting fluid from a mixture of a fluid and a particulate located in a container comprising:

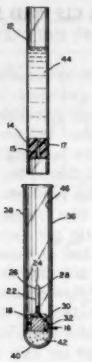
an elongate, hollow body insertable in the container and having a first and a second open end;

detachable closure means for said first end;

a self-sealing septum sealingly disposed within said body adjacent said second end; and

a composite piston slidably insertable into said second end of said hollow body, said piston having an annular body

defining a central passageway therethrough, an axially projecting hollow piercing element adapted to pierce said septum and provide communication between said central passageway and the interior of said hollow body, a filter element disposed within said central passageway, and means on said piston for sealingly engaging the interior wall of the container, said means including a laterally



extending flange extending beyond the outer wall of said hollow body whereby when the apparatus is inserted into the container, the fluid of the mixture is caused to pass through said filter element, said hollow piercing means, and thence into the interior of said hollow body, and when the apparatus is withdrawn from the container, the laterally extending flange maintains said composite piston in the container.

4,210,624

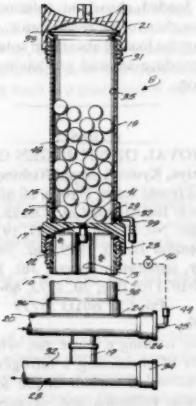
UNIVERSAL CHLORINATOR MODULE

Kenneth E. Price, Whittier, Calif., assignor to Rainbow Lifegard Products, Inc., El Monte, Calif.

Continuation of Ser. No. 735,964, Oct. 27, 1976, abandoned. This application May 15, 1978, Ser. No. 906,673

Int. Cl.[2] B01D *11/02*

U.S. Cl. 422—264 **4 Claims**



1. A chlorinator for use with a swimming pool system having an intermittently operated water circulation pump and a filter assembly, the chlorinator being adapted for placement on the filter assembly exteriorly thereof and comprising a housing defining therein a selectively openable airtight chamber adapted for receiving therein a quantity of water-soluble dry chlorine material and for trapping in the chamber upon closure thereof a quantity of air which is compressible in response to introduction to the chamber of water under pressure, a water inlet port communicating to the chamber essentially at the bottom thereof, and a separate water outlet port communicating from the chamber essentially at the bottom thereof, the inlet port being adapted for connection thereto of an exterior inlet duct by which water to be chlorinated can be applied under substantial pressure from the system to the inlet port and to rise in the chamber against and compress air trapped therein, the duct including a closable flow regulating valve, the outlet port being adapted for connection to an outlet duct for flow of water therefrom to the system at a location in the system downstream relative to the pump from the location of connection of the inlet duct to the system, and a check valve coupled to the outlet port for preventing water flow through the outlet port to the chamber, the inlet and outlet ports defining the only water flow openings so and from the chamber during operation of the chlorinator whereby air trapped in the chamber can expand to drive water from the chamber during periods when water is not supplied under said substantial pressure to the chamber via the inlet port, the check valve and the regulating valve when closed serving to prevent flow of water to the chamber when the chamber is opened for loading of dry chlorine material thereinto.

4,210,625

PROCESS FOR SEPARATING COBALT AND NICKEL BY SOLVENT EXTRACTION

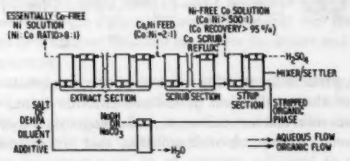
Douglas S. Flett, Stevenage, England, assignor to Matthey Rustenburg Refiners (Proprietary) Limited, Johannesburg, South Africa

Filed Jan. 10, 1978, Ser. No. 868,455

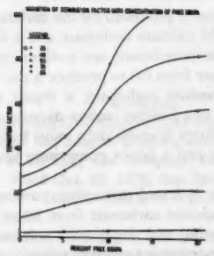
Claims priority, application United Kingdom, Jan. 11, 1977, 935/77

Int. Cl.[2] C01G *53/00*

U.S. Cl. 423—139 **20 Claims**



SCHEMATIC DIAGRAM OF PROCESS



1. In a process for the separation of cobalt from nickel by solvent extraction which comprises contacting an aqueous solution containing divalent cobalt and nickel ions in the octahedral configuration with an organic phase containing an ester of phosphoric acid and then separating the organic phase

containing cobalt from the aqueous phase containing nickel, the improvement which comprises carrying out said contact at a temperature in the range of 40° C. to 90° C. a concentration of 11 to 16.0 grams per liter of cobalt in the organic phase so as to convert substantially all the cobalt present in the organic phase from an octahedral configuration to a tetrahedral configuration and thus enable the said organic phase to preferentially extract cobalt rather than nickel, the latter remaining in the octahedral configuration and in the aqueous phase.

4,210,626

MANUFACTURE OF MAGNESIUM CARBONATE AND CALCIUM SULPHATE FROM BRINE MUD

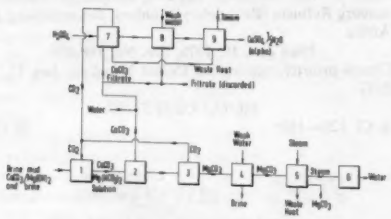
John S. Berrie, and Graham E. Woolley, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 21, 1976, Ser. No. 688,547

Claims priority, application United Kingdom, Jun. 4, 1975, 24103/75

Int. Cl.² C01F *1/00, 11/18, 11/46*

U.S. Cl. 423—166 **21 Claims**



11. A process for treating brine mud, the precipitate resulting from the purification of sodium chloride brine, which comprises solid calcium carbonate, solid magnesium hydroxide and aqueous sodium chloride solution, said process comprising:

(i) carbonating a slurry of brine mud in sodium chloride brine to a pH in the range of 6–8 with carbon dioxide to produce a slurry of solids comprising calcium carbonate and a liquor comprising magnesium bicarbonate and sodium chloride,

(ii) separating the slurry produced by the carbonation stage (i) into moist solid calcium carbonate and a liquor comprising magnesium bicarbonate and sodium chloride,

(iii) heating the liquor from (ii) to produce a slurry of solids comprising magnesium carbonate, a liquor comprising sodium chloride, and gaseous carbon dioxide,

(iv) separating the slurry from (iii) into moist hydrated magnesium carbonate and a liquor comprising sodium chloride,

(v) drying the moist hydrated magnesium carbonate,

(vi) slurrying the calcium carbonate from stage (ii) with a water and interacting said slurry with sulphuric acid to produce a slurry comprising calcium sulphate in the solid phase and gaseous carbon dioxide,

(vii) separating moist calcium sulphate from the slurry produced in stage (vi), and

(viii) drying the moist calacium sulphate from stage (vii) to give a dry calcium sulphate.

4,210,627

METHOD FOR INCREASING THE HYDROGEN SULPHIDE CONCENTRATION IN AN ACID GAS

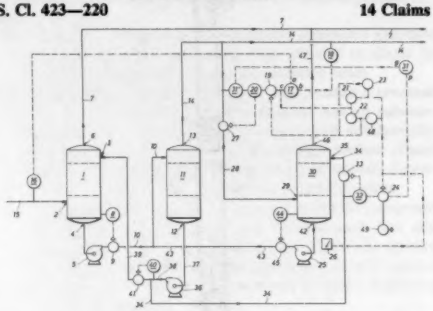
Jan Verloop, and Johannes W. T. M. Braam, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 31, 1978, Ser. No. 873,821

Claims priority, application Netherlands, Feb. 4, 1977, 7701175

Int. Cl.² B01D *53/34*

U.S. Cl. 423—220 **14 Claims**



1. A process for the removal of H_2S and CO_2 from a gas stream comprising:

(a) measuring the flow of the gas stream to produce a value representing the magnitude of the gas stream,

(b) contacting said gas stream with a liquid regenerable absorbent in an absorber to absorb H_2S and CO_2 from the gas stream and producing a loaded absorbent solution,

(c) regenerating the loaded absorbent solution in a regenerator to produce an acid gas stream containing H_2S and CO_2, and an absorbent solution,

(d) comparing the value representing the magnitude of gas stream entering the absorber of step (a) with a predetermined value, and, if this value is smaller than a predetermined value, passing a portion of the acid gas stream to a second selective absorber, the second absorber being maintained under conditions to absorb H_2S and reject CO_2 and the absorbent solution being a portion of that regenerated from the regenerator,

(e) returning loaded absorbent solution from the second selective absorber to the regenerator, and

(f) regenerating the loaded absorbent solutions from steps (c) and (e) to produce an acid gas having an increased H_2S concentration.

4,210,628

REMOVAL OF NITROGEN OXIDES

Nobutaka Ninomiya, Kyoto; Hiroshi Nishino; Toshio Aibe, both of Osaka, and Kiyoshi Itoga, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 487,801, Jul. 11, 1974, abandoned. This application Jan. 5, 1979, Ser. No. 1,196

Claims priority, application Japan, Jul. 12, 1973, 48-78980; Sep. 21, 1973, 48-107170; Dec. 20, 1973, 48-143174

Int. Cl.² B01D *53/39*

U.S. Cl. 423—239 **4 Claims**

1. A process for treating a waste gas, which consists essentially of the steps of contacting a nitrogen oxide-containing waste gas with activated carbon as the sole catalyst in the presence of gaseous ammonia and oxygen at a temperature between about 150° C. and about 250° C. to convert the nitrogen oxide to nitrogen, whereby the nitrogen oxide is removed from said waste gas, said gaseous ammonia being present in amounts not less than ¾ mole per mole, in terms of NO, of the nitrogen oxide contained in the waste gas and wherein the oxygen is present in an amount of not less than 0.5 mole per

mole, in terms of NO, of the nitrogen oxide contained in the waste gas.

4,210,629

FLUE GAS TREATMENT

Edward Michalko, Hemet, Calif., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 1, 1979, Ser. No. 16,675
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 **7 Claims**

1. In a process for the absorptive removal of sulfur dioxide from a gaseous mixture by contacting said gaseous mixture in a scrubbing zone with a scrubbing liquor comprising an aqueous alkaline carbonate reagent solution having dissolved therein an undesirable quantity of silica contaminant which, upon the lowering of the pH of said scrubbing liquor tends to precipitate from solution and form deleterious deposits which interfere with the functioning of said scrubbing zone, the improvement which comprises the prior addition of a water soluble basic salt of aluminum to said scrubbing liquor before the contacting of said liquor with said gaseous mixture thereby effecting a chemical reaction between said silica and said basic salt of aluminum to obtain an aluminosilicate compound having a minimum deleterious effect when precipitated and relatively minor interference with the functioning of said scrubbing zone.

4,210,630

STABILIZED RED PHOSPHORUS

Franz-Josef Dany; Ursus Thümmler, both of Erftstadt; Joachim Wortmann, Kerpen-Türnich; Horst Staendeke, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 21, 1979, Ser. No. 22,446
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813151
Int. Cl.² C01B *25/023*
U.S. Cl. 423—265 **4 Claims**

1. Stabilized pulverulent red phosphorus comprising a homogeneous blend of red phosphorus particles with a size of at most about 2 mm, aluminum hydroxide and a further metal hydroxide as oxidation stabilizers, wherein the metal hydroxide is lead hydroxide, the homogeneous blend containing aluminum hydroxide and lead hydroxide in a total proportion of about 0.1 to 6 weight%, based on the quantity of red phosphorus, the aluminum hydroxide and lead hydroxide, calculated as Al_2O_3 to PbO, being used in a quantitative ratio of about 0.5 to 2.0.

4,210,631

PREPARATION OF BORON TRICHLORIDE

Norman R. DeLue, Corpus Christi, Tex., and John C. Crano, Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 26, 1979, Ser. No. 23,858
Int. Cl.² C01B *35/06*
U.S. Cl. 423—292 **20 Claims**

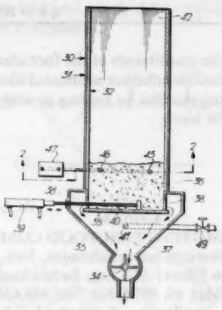
1. In the process of producing boron trichloride by chlorination of borate ester wherein phosgene is produced as a coproduct, the improvement which comprises reducing the amount of phosgene formed by contacting the borate ester with chlorine in a reactor in the presence of a free-radical initiator at temperatures of from about 20° C. to about 100° C. and simultaneously removing gaseous products of the chlorination reaction from the reactor, the mole ratio of chlorine to borate ester introduced into the reactor being about 5.5:1 and about 7.5:1.

4,210,632

PROCESS AND APPARATUS FOR CALCINING LIMESTONE

Terence A. Rourke, Nelson, Canada, assignor to Domlim Inc., Longueuil, Canada

Filed May 1, 1978, Ser. No. 901,638
The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.
Int. Cl.² C01F *11/06*; F27D *1/08*
U.S. Cl. 423—637 **15 Claims**



1. A process for the continuous production of calcined lime in a vertical kiln, in which fuel is injected, through at least one injector spaced from the lower end of the kiln, at a pulsed rate between 100 and 1,000 injections per injector per minute, each of said injections occurring in a time period of up to one third of the pulse period, and air is passed continuously upwardly, countercurrent to the passage of lime, through the kiln from a position below said injector and in an amount sufficient to support combustion, and wherein a protected void space is provided in said kiln adjacent and vertically above said injectors so as to form a mixing space for said fuel and air.

6. An apparatus for the production of calcined lime comprising: a refractory lined vertical shaft provided with material feed means and gas exhaust means at the upper end thereof;

means to withdraw calcined lime from the lower end of said apparatus;

at least one injector means spaced from said lower end of said apparatus for introducing fuel into said shaft;

means for supplying fuel to said injector means at a rate between 100 and 1,000 injections per minute;

means for passing air, in an amount sufficient to support combustion in said apparatus, through said apparatus from a position below said injector means; and

deflector means disposed vertically above and spaced from said injector means in said shaft, thereby creating a protected void space adjacent and above said injector means in which said air and fuel mix.

4,210,633

FLURANDRENOLIDE FILM FORMULATION

Harun Takruri, and Jane E. Chavers, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Minn.

Filed Oct. 20, 1978, Ser. No. 953,160
Int. Cl.² A61K *31/79, 31/58*
U.S. Cl. 424—80 **2 Claims**

1. The process of treating a lesion of a persistent dermatosis treatable by an anti-inflammatory steroid which comprises applying to a skin area of a human in which there is such a lesion, a formulation capable of forming a medicated water-soluble, adherent film containing the following ingredients in the percentages (w/w) given:

Ingredient	Percent
Flurandrenolide	0.01–0.5
Polyvinyl Alcohol	4–15
Polyvinylpyrrolidone	5–20
Glycerin	0–20
Ethyl Alcohol	0–30
Propylene Glycol	0–20
Benzyl Alcohol	0–5
Disodium Edetate	0–0.5
Citric Acid	0–1
Water	q.s. to 100

allowing the volatile constituents of the formulation to evaporate leaving a continuous adherent medicated film covering the lesion, and removing the film by peeling or with water after a period of at least 16 hours.

4,210,634

GROWTH PROMOTING FISH FOOD COMPOSITION

Karl H. Jaeger, Obereggenen-Schallsingen, Fed. Rep. of Germany, assignor to Elkawi AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,635

Claims priority, application Switzerland, May 24, 1977, 6413/77

Int. Cl.[2] A61K *35/14, 37/02*

U.S. Cl. 424—101 **9 Claims**

1. In a fish food composition containing, as principal active ingredients, 15 to 50 percent native protein, 2 to 5 percent fat, and 3 to 10 percent of at least one adjuvant selected from the group consisting of crude fiber, minerals, vitamins, and trace elements, the improvement which comprises said composition containing 0.05 to 0.5 percent of at least one material capable of catalytically enhancing cell respiration in animal tissue, and a polypeptide composed of naturally occurring amino acid units, the weight of said polypeptide being between 2 and 15 times the weight of said material, said percent values being based on the weight of said food composition on a dry basis, said material being an extract of the blood of a vertebrate animal, said polypeptide having an average molecular weight of 2000 to 50,000, the composition being useful for enhancing the protein to fat ratio in fish.

4,210,635

ANTIBACTERIAL COMPOSITION

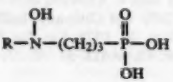
Hiroshi Imanaka, Osaka, and Minoru Nishida, Kyoto, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 877,944, Feb. 15, 1978. This application Sep. 14, 1978, Ser. No. 942,364

Int. Cl.[2] H61K *35/00*

U.S. Cl. 424—114 **9 Claims**

1. An antibacterial composition comprising (a) a phosphonic acid derivative of the formula:



wherein R is formyl or acetyl, or its pharmaceutically acceptable salt and (b) an antibiotic selected from ampicillin, carbenicillin, ticarcillin or their pharmaceutically acceptable salts, wherein (a) and (b) are contained in the composition in a ratio of 1:2 to 2:1 by weight.

4,210,636

ANTISECRETORY POLYPEPTIDES

Eric L. Lien, Paoli; Dimitrios Sarantakis, West Chester, and Norman H. Grant, Wynnewood, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 17, 1978, Ser. No. 906,813

Int. Cl.[2] A61K *37/02;* **C07C** *103/52*

U.S. Cl. 424—177 **6 Claims**

1. A compound selected from the group consisting of [des-Ala^1-Gly^2], Ala^5, Ser^6-somatostatin, Met^7-somatostatin, and [des-Ala^1-Gyl^2-Lys^4],-(3-mercapto-1-oxopropyl)^3-somatostatin,

the reduced linear forms thereof and pharmaceutically acceptable salts thereof.

4,210,637

COMPOSITION AND METHOD FOR SUPPRESSING APPETITE FOR CALORIES AS CARBOHYDRATES

Richard J. Wurtman; Judith J. Wurtman, both of Waban, and John D. Fernstrom, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 31, 1978, Ser. No. 929,387

Int. Cl.[2] A61K *31/70*

U.S. Cl. 424—180 **17 Claims**

8. The method of using a composition consisting essentially of tryptophan and a carbohydrate for decreasing appetite in an animal for calories as carbohydrates which comprises administering to the animal a composition consisting essentially of an amount of tryptophan effective to increase brain serotonin levels and a carbohydrate in an amount effective to cause insulin to be released in the animal.

17. A composition which, when administered to an animal, decreases appetite for calories as carbohydrates which comprises an amount of tryptophan effective to increase brain serotonin levels in the animal, a carbohydrate in an amount effective to cause insulin to be released in the animal, tyrosine in an amount effective to maintain or increase brain dopamine and/or norepinephrine levels in the animal and caffeine.

4,210,638

ANTIVIRAL COMPOSITION AND METHOD OF TREATING VIRUS DISEASES

Sheldon Greer, Miami, Fla., assignor to PCR, Inc., Gainesville and University of Miami, Miami, both of, Fla.

Filed Mar. 17, 1978, Ser. No. 887,541

Int. Cl.[2] A61K *31/70;* **C07H** *17/00*

U.S. Cl. 424—180 **15 Claims**

1. A pharmaceutical composition for the treatment of Herpes or Herpes-like viruses, comprising an effective amount of 5-trifluoromethyl-2'-deoxycytidine and an effective amount of a cytidine deaminase inhibitor which is tetrahydrouridine or 2'-deoxytetrahydrouridine.

10. A method of treating a host suffering from a Herpes or a Herpes-like virus infection, said method comprising administering to said host a therapeutically effective amount of 5-trifluoromethyl-2'-deoxycytidine and a therapeutically effective amount of a cytidine deaminase inhibitor which is tetrahydrouridine or 2'-deoxytetrahydrouridine.

4,210,639

5'-DEOXY-5'-(ISOBUTYLTHIO)-3-DEAZAADENOSINE, METHOD OF MAKING SAME AND ITS ANTIVIRAL EFFECT ON ROUS SARCOMA VIRUS AND GROSS MURINE LEUKEMIA VIRUS

Peter K. Chiang, Kensington; Guilio L. Cantoni, Bethesda; John P. Bader, Rockville, all of Md.; William M. Shannon, Birmingham, Ala.; H. Jeanette Thomas, Birmingham, Ala., and John A. Montgomery, Birmingham, Ala., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Aug. 29, 1978, Ser. No. 937,704
Int. Cl.[2] A61K *31/70*; C07H *19/16, 17/00*
U.S. Cl. 424—180 3 Claims

1. 5'-Deoxy-5'-(isobutylthio)-3-deazaadenosine.

2. A method of inhibiting viral activity in chick embryo cells infected with Rous sarcoma virus which comprises mixing with said cells in tissue culture an effective amount of 5'-deoxy-5'-(isobutylthio)-3-deazaadenosine and measuring the resulting inhibition of viral foci in said cells.

4,210,640

SUBLIMABLE FUNGICIDAL COMPOSITIONS CONTAINING TRIISOPROPYL- OR TRITERTIARY-BUTYL-S-TRIOXANE CARRIERS

Yasuhiko Ueno, Kawanishi; Yoshito Saeki, Suita; Takuya Akiyama, Nagaokakyo, and Masao Fujita, Amagasaki, all of Japan, assignors to Ogawa & Co., Ltd., Osaka, Japan

Division of Ser. No. 737,196, Oct. 29, 1976, Pat. No. 4,123,525, which is a continuation-in-part of Ser. No. 463,176, Apr. 22, 1974, abandoned. This application Aug. 7, 1978, Ser. No. 931,444
Claims priority, application Japan, Jun. 15, 1973, 48-68013; Jun. 15, 1973, 48-68014
Int. Cl.[2] A01N *9/00, 9/28, 9/36*
U.S. Cl. 424—181 8 Claims

1. In a sublimable fungicidal composition in the form or rough grains, pulverized powders or tablets consisting essentially of an effective amount of at least one fungicide and a carrier therefor, said fungicide being intimately mixed with the carrier, the improvement wherein the carrier is triisopropyl-s-trioxane having a melting point of 62.5° C. or tritertiary butyl-s-trioxane having a melting point of 92.0° C.

4,210,641

NOVEL POLYSACCHARIDE EXTRACTS AND METHOD OF USE

Claudine Brossard, Osny; Martine Henry, Fontenay le Fleury, and Denis Raichvarg, Epinay sur Seine, all of France, assignors to Roussel Uclaf, Paris, France

Filed Oct. 20, 1978, Ser. No. 953,001
Claims priority, application France, Oct. 27, 1977, 77 32416
Int. Cl.[2] C08B *37/00*; A61K *31/73*
U.S. Cl. 424—180 12 Claims

1. Polysaccharide extracts of microbial bodies of *Haemophilus influenza* having an apparent molecular weight greater than 200,000 and constituted principally of galactose, glucose and mannose and containing a small amount of osamines.

9. A method of treating or immunizing against *Haemophilus influenza* infections in warm-blooded animals comprising administering orally, rectally, parenterally or topically to warm-blooded animals an antigenically and immunostimulatingly effective amount of a polysaccharide of claim 1.

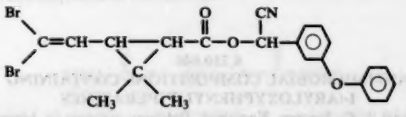
4,210,642

INSECTICIDAL AND ACARICIDAL COMPOSITIONS

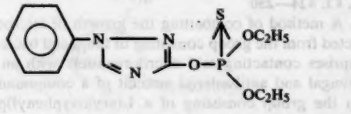
Klaus-Detlef Bock, Kelsterbach, and Anna Waltersdorfer, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 947,858
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744540; Nov. 10, 1977, 2750304
Int. Cl.[2] A01N *9/36, 9/20*
U.S. Cl. 424—200 7 Claims

1. An insecticidal and acaricidal composition containing a combination of compound I



and compound III



the weight ratio of compound I to compound III being 1:100 to 50:1.

4,210,643

PHOSPHONATE PHARMACEUTICAL COMPOSITION

Herbert A. Fleisch, and Rolf Felix, both of Bern, Switzerland, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 792,946, May 2, 1977, Pat. No. 4,113,861. This application Jun. 12, 1978, Ser. No. 915,026
The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—204 1 Claim

1. A process for treating *diabetes mellitus* in humans and lower animals, comprising administering to a human or lower animal in need of such treatment a safe and effective amount of ethane-1-amino-1,1-diphosphonic acid, or a pharmaceutically-acceptable salt thereof.

4,210,644

MALE CONTRACEPTION

Larry L. Ewing, Timonium, Md., and Claude Desjardins, Austin, Tex., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 23, 1978, Ser. No. 880,879
Int. Cl.[2] A61K *31/56*
U.S. Cl. 424—239 6 Claims

1. A method of affecting male contraception which comprises subdermally implanting in the male a contraceptively effective amount of a synergistically active mixture of an androgen and an estrogen in one or more slow release capsules, the ratio of androgen to estrogen being in the range of 250 to 1 and 500 to 1, and permitting the androgen and estrogen to be continuously released at relatively constant rates for the desired length of time, said method being characterized by providing effective contraception without chronic elevation of the androgen and estrogen content in the peripheral blood.

4,210,645

(1,4)DITHIINO(2,3-b)(1,2,5)-THIADIAZOLE(3,4-e)PYRAZINE-6,7-DICARBONITRILE

Charles A. Wilson, and Craig E. Mixan, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 10, 1978, Ser. No. 894,670

Int. Cl.[2] A61K *31/505;* **C07D** *513/14*

U.S. Cl. 424—250 **3 Claims**

1. (1,4)Dithiino(2,3-b)(1,2,5)thiadiazole-(3,4-e)pyrazine-6,7-dicarbonitrile.

4,210,646

ANTIMICROBIAL COMPOSITIONS CONTAINING 1-(ARYLOXYPHENYL)PIPERAZINES

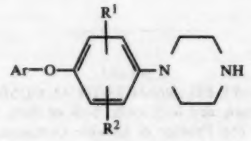
Marcel A. C. Janssen, Vosselaar, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

Filed Apr. 11, 1978, Ser. No. 895,166

Int. Cl.[2] A01N *9/00, 9/22*

U.S. Cl. 424—250 **6 Claims**

6. A method of combatting the growth of microorganisms selected from the group consisting of fungi and bacteria which comprises contacting said microorganisms with an effective antifungal and antibacterial amount of a compound selected from the group consisting of a 1-(aryloxyphenyl)piperazine having the formula



and the physiologically acceptable acid addition salts thereof, wherein:

R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl, lower alkyloxy, cyano, trifluoromethyl and lower alkyloxycarbonyl; and

Ar is a member selected from the group consisting of phenyl, substituted phenyl and naphthalenyl, wherein said substituted phenyl is phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl, lower alkyloxy, trifluoromethyl, cyano, hydroxy(lower alkyl), lower alkylcarbonyl, nitro, amino and mono- and di(lower alkyl)amino.

4,210,647

ANTIVIRAL COMBINATIONS

Donald C. DeLong, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1979, Ser. No. 49,671

Int. Cl.[2] A61K *31/495, 31/13*

U.S. Cl. 424—250 **1 Claim**

1. A method of suppressing influenza virus infections in mammals which comprises administering to a mammal exposed to influenza virus a virus-suppressing amount of a combination containing from 0.5–5 mg/kg of ethyl 6,7-dibromo3-4-dihydro-3-oxquinoxaline carboylate and from 0.3–3 mg/kg of 1 aminoadamantane.

4,210,648

11-AMINOACYL-5,11-DIHYDRO-6H-PYRIDO(2,3-B)(1,4)BENZODIAZEPIN-6-ONES AND SALTS THEREOF

Günther Schmidt, and Mátyás Leitold, both of Biberach an der Riss, Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

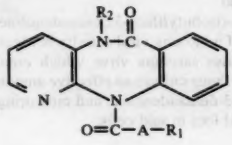
Filed May 19, 1978, Ser. No. 907,823

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724478

Int. Cl.[2] A61K *31/55*

U.S. Cl. 424—256 **5 Claims**

1. A compound of the formula



wherein

A is methylene or ethylene,

R_1 is (1 -ethyl-pyrrolidin-2-yl)-methyl-amino, (1-methyl-pyrrolidin-2-yl)-methyl-amino, (1-methyl-pyrrolidin-2-yl)-ethyl-amino, (1-n-propyl-pyrrolidin-2-yl)-methyl-amino or (1-allyl-pyrrolidin-2yl)-methyl-amino; and

R_2 is hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of treating gastro-intestinal ulcers or inhibiting gastro-intestinal secretion in a warm-blooded animal, which comprises perorally, parenterally or rectally administering to said animal an effective anti-ulcerogenic or secretion-inhibiting amount of a compound of claim 1.

4,210,649

PROCESS FOR THE TREATMENT OF PATIENTS SUFFERING FROM DREPANOCYTOSIS

Jean Blanchard, Toulouse, and Monique Verry, Saint-Cloud, both of France, assignors to Centre d'Etude pour l'Industrie Pharmaceutique, Toulouse, France

Filed Jun. 20, 1978, Ser. No. 917,374

Claims priority, application France, Jun. 22, 1977, 77 19161

Int. Cl.[2] A61K *31/435*

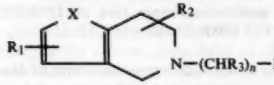
U.S. Cl. 424—256 **2 Claims**

1. A method for the treatment of a patient suffering of drepanocytic anemia caused by the presence of S-hemoglobin in drepanocytes, which patient is showing the symptoms of drepanocytosis, which method comprises,

administering to said patient a compound of formula (I) causing a reversal of the drepanocytosis by causing the drepanocytes to lose their sickle shape and revert to their disk-like shape,

increasing the hemoglobin content and

causing a remission of the symptoms of said patient, the compound of formula (I) being administered in a therapeutically effective amount, and having the formula



(I)

in which X is oxygen or sulfur; R is a radical selected from the group consisting of hydrogen, a phenyl radical, a phenyl radical substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, nitro, amino, sulfonylamino, aryl, carboxy, alkoxycarbonyl, cyano, hydroxymethyl and methylenedioxy group; a styryl, naphthyl, thienyl, benzhydryl radical, each of the later being

optionally substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, aryl, nitro, amino, sulfonylamino, carboxy, alkoxycarbonyl, cyano, hydroxymethyl and methylenedioxy group; a benzoyl radical and a benzoyl radical substituted with at least one radical selected from the group consisting of a halogen atom, a lower alkyl, lower alkoxy, nitro, amino and sulfonylamino group; R_1 and R_2 represent each at least one atom or group selected from the group consisting of hydrogen, halogen, a hydroxy, lower alkyl, lower alkoxy, nitro and amino group; R_3 is a radical selected from the group consisting of hydrogen, halogen, a hydroxy, lower alkyl, lower alkoxy, nitro and amino group; and n is zero or an integer from 1 to 15; and the symbols R_3 may have different meanings in each radical CHR_3 when n is greater than 1, or a pharmaceutically acceptable acid addition salt or quaternary ammonium derivative of said compound.

4,210,650
ANTIPHLOGISTIC METHOD OF TREATMENT

Csaba Szantay; Lajos Szabo; Laszlo Töke; Istvan Toth; Sandor Virag; Erzsebet Kanyo, and Agoston David, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

Continuation-in-part of Ser. No. 744,608, Nov. 24, 1976, which is a continuation-in-part of Ser. No. 624,470, Oct. 21, 1975, Pat. No. 4,102,886. This application Feb. 21, 1979, Ser. No. 13,271

Claims priority, application Hungary, Oct. 23, 1974, C 1514; Sep. 11, 1975, C 1603

Int. Cl.[2] A61K *31/47*

U.S. Cl. 424—258 **3 Claims**

1. An antiphlogistic method of treatment which comprises administering to a mammalian subject requiring such treatment a pharmaceutically effective dosage of a compound selected from the group which consists of:

2-oxo-3-(β-cyanoethyl)-9,10-methylenedioxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinilozidine,

2-oxo-3-(β-cyanoethyl)-9,10-diethoxy-1,2,3,4,6,7-hexahydro-11bH-benzo(a)quinilozidine,

and a pharmaceutically effective salt thereof.

4,210,651
THIAPROSTAGLANDINS

Hans-Eckart Radunz; Josef Krämer; Manfred Baumgarth, and Dieter Orth, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

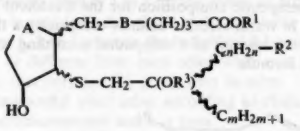
Division of Ser. No. 576,140, May 9, 1975, Pat. No. 4,080,458. This application Jan. 18, 1978, Ser. No. 870,555

Claims priority, application Fed. Rep. of Germany, May 11, 1974, 2422924

Int. Cl.[2] A61K *31/19, 31/215;* C07C *177/00*

U.S. Cl. 424—263 **22 Claims**

1. A compound of the formula



wherein A is —CO— or —CHOH—, B is CH_2—CH_2—, R^1 is H or alkyl with 1 to 4 carbon atoms, m is a whole number from 0 to 5, n is a whole number from 0 to 3, R^2 is alkoxy of 1 to 4 carbon atoms, phenoxy, pyridyl, thienyl, naphthyl, phenoxy substituted by F, Cl, Br, OH, OCH_3, CH_3 or CF_3, and R^3 is H, methyl or ethyl, and the physiologically acceptable salts thereof.

4,210,652
PHARMACOLOGICALLY ACTIVE 1,3-BIS[1-(2-HETEROALKYLTHIO)ETHYLAMINO)-2-NITROVINYL-1-AMINO]PROPANE DERIVATIVES

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

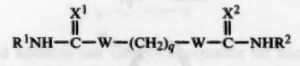
Division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624. This application Oct. 4, 1978, Ser. No. 948,617

Claims priority, application United Kingdom, Jul. 28, 1976, 31392/76

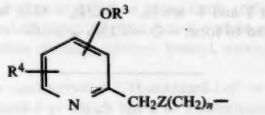
Int. Cl.[2] C07D *213/53;* A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. A compound of the formula



wherein X^1 and X^2 are each $CHNO_2$; R′ is a grouping of the structure



wherein R^3 is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen, or methylamino; or $—OR^3$ and R^4 can together form a $—O(CH_2)_bO$-group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 has the same scope as R′ or a grouping of the structure:

$$Het—(CH_2)_{m'}Z'(CH_2)_{n'}—$$

wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring such as imidazole, pyridine, thiazole, isothiazole, oxazole, isoxazole, pyrazole, triazole or thiadiazole which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z′ is sulphur or methylene; m′ is 0, 1 or 2; n′ is 2 or 3 and the sum of m′ and n′ is 3, 4; W is NH; and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

8. A method of inhibiting H-2 histamine receptors which comprises administering orally or parenterally to an animal in need thereof in an effective amount to inhibit said receptors a compound of claim 1.

4,210,653
PYRIDYLOXYPROPANOLAMINES

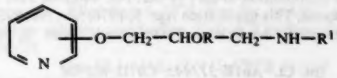
John J. Baldwin, Lansdale, and David E. McClure, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 27, 1978, Ser. No. 919,593

Int. Cl.[2] A61K *31/44;* C07D *213/04*

U.S. Cl. 424—263 **13 Claims**

1. Compounds having the formula

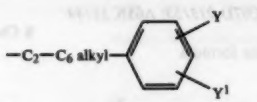


wherein R is H or

wherein

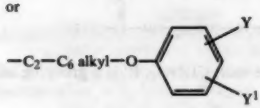
L is C_1–C_{10} alkyl, phenyl or mono- or di-substituted phenyl wherein said substituents are C_1–C_4 alkyl, C_1–C_4 alkoxy or halo and

R^1 is a phenyl C_2-C_6 alkyl group having the formula



(a)

or



(b)

wherein Y and Y^1 are H, $-OCH_3$, —OH, halo or CN, or are joined to form $-O-(CH_2)_{1 \text{ or } 2}-O-$.

4,210,654

ANTISEBORRHEIC PREPARATIONS

Robert Bauer, Bettingen, and Hans U. Hostettler, Arlesheim, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 11, 1978, Ser. No. 941,444

Claims priority, application Switzerland, Sep. 14, 1977, 11213/77

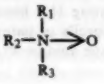
Int. Cl.[2] A61K *31/44*

U.S. Cl. 424—263 **8 Claims**

1. An antiseborrheic composition comprising:

(a) a cosmetically acceptable carrier suitable for application to the skin, hair and scalp, said carrier being substantially free from oils and fats, and

(b) from about 0.2% by weight to about 5% by weight of pyridoxine tripalmitate and, as a solubilizer therefor, from about 0.1% by weight to about 10% by weight of one or more amine oxides of the formula



wherein R_1 is an alkyl group containing from 16 to 20 carbon atoms and each of R_2 and R_3 is methyl or hydroxyethyl.

4,210,655

ANTI-DEPRESSANT BENZOFURANYL PIPERIDINES

Karl Schenker, Binningen, and Raymond Bernasconi, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

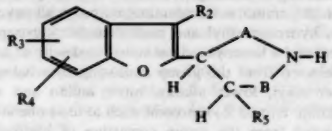
Continuation of Ser. No. 657,652, Feb. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 446,244, Feb. 27, 1974, abandoned. This application Apr. 5, 1978, Ser. No. 893,104

Claims priority, application Switzerland, Mar. 2, 1973, 3103/73

Int. Cl.[2] A61K *31/445*; C07D *405/04*

U.S. Cl. 424—267 **33 Claims**

1. A compound of the formula I a



(Ia)

wherein

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

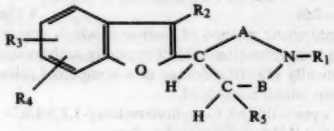
R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members,

or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid.

18. A compound of the formula Ib



(Ib)

wherein

R_1 represents 2-propynyl or cyclopropylmethyl

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

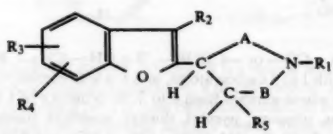
R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members, or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid.

30. A therapeutic composition for the treatment of mental depression in warm-blooded animals comprising a therapeutically effective amount of a compound according to claim 18 having the formula



(Ib)

wherein

R_1 represents 2-propynyl or cyclopropylmethyl

R_2 represents hydrogen or lower alkyl,

R_3 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy, hydroxy, trifluoromethyl, 1-hydroxycycloalkyl, cycloalk-1-enyl or cycloalkyl, each of the three last-named groups having 5–8 carbon atoms,

R_4 represents hydrogen, lower alkyl, lower alkoxy, halogen up to atomic number 35, benzyloxy or hydroxy, or

R_3 and R_4 together represent trimethylene or tetramethylene or, corresponding to a fused-on benzene ring, the 1,3-butadienylene radical,

R_5 represents hydrogen, or alkyl having at most 4 carbon atoms, and

A and B represent methylene, ethylene, trimethylene or a direct bond, whereby A and B together always contain 3 chain members, or a pharmaceutically acceptable addition salt thereof with an inorganic or organic acid, together with a pharmaceutical carrier.

4,210,656

IMIDAZOLYL VINYL ETHERS AND PROCESS FOR PREPARING SAME

Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Kurt Thiele, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

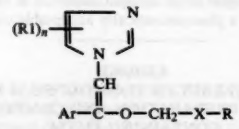
Filed Dec. 18, 1978, Ser. No. 970,312

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757113

Int. Cl.[2] A61K *31/415;* C07D *233/60*

U.S. Cl. 424—273 R **8 Claims**

1. An α-aryl-β-imidazol-1-yl vinyl ether having the formula



(I)

or an acid addition salt thereof acceptable for bactericidal or fungicidal use, in which Ar represents phenyl or naphthyl that is unsubstituted or mono- or poly-substituted with substituents that are independently selected from the group consisting of halogeno, alkyl and cycloalkyl of up to 6 carbon atoms, trifluoromethyl, alkoxy and alkylthio of up to 6 carbon atoms, phenyl, benzyl, cyano, nitro and amino,

X represents oxy, thio, sulfinyl or sulfonyl,

R is (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple carbon bonds or (b) Ar as defined above,

R1 represents alkyl of 1 to 6 carbon atoms or nitro and may occur in any desired position in the imidazole ring, and

n is zero, 1, 2 or 3 wherein the individual R1 groups are the same or different from each other when n is 2 or 3 provided that only one R1 group may be nitro.

2. An imidazolyl vinyl ether according to claim 1 wherein Ar is 2,4-dichlorophenyl and n is zero.

6. A process for making a compound as defined in claim 1 which comprises reacting a corresponding 1-arylacylimidazole in the presence of NaH initially at a temperature below 0° C. and thereafter at a temperature up to 50° C. with a corresponding α-halogen ether or α-halogen thioether or α-halogen sulfinyl compound or α-halogen sulfonyl compound, and recovering imidazolyl vinyl ether product from the resulting reaction mixture.

4,210,657

ARYL IMIDAZOLYL VINYL ETHERS AND PROCESSES FOR USING SAME

Ludwig Zirngibl, Zofingen; Johanna Fischer, Reiden, and Kurt Thiele, Zofingen, all of Switzerland, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland

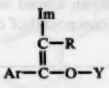
Filed Dec. 18, 1978, Ser. No. 970,330

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839388

Int. Cl.[2] A61K *31/415;* C07D *233/60*

U.S. Cl. 424—273 R **9 Claims**

1. An imidazolyl vinyl ether of the formula



(I)

or an acid addition salt thereof acceptable for bactericidal or fungicidal use, wherein

Ar signifies phenyl or naphthyl unsubstituted or mono- or polysubstituted with substituents that are independently selected from the group consisting of halogeno, alkyl and cycloalkyl of up to 6 carbon atoms each, trifluoromethyl, alkoxy and alkylthio of from 1 to 6 carbon atoms in the alkyl portion of each, phenyl, benzyl, cyano, nitro and amino,

Im signifies unsubstituted 1-H-imidazol-1-yl or substituted 1-H-imidazol-1-yl which has 1 to 3 substituents independently selected from the group consisting of halogeno, alkyl and alkoxy of 1 to 4 carbon atoms, and not more than one nitro group,

Y signifies (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which either is saturated or is unsaturated and contains one or more double and/or triple bonds, or (b) Ar as defined above, or (c) -Z-Ar wherein Ar is as defined above and Z is alkylene or alkylene having its carbon chain once or twice interrupted by a linkage selected from the group consisting of oxy, thio, sulfinyl or sulfonyl or (d) an aliphatic hydrocarbyl as defined in (a) above wherein the carbon chain linked to the ether oxygen is once or twice interrupted by a linkage selected from the group consisting of oxy, thio, sulfinyl and sulfonyl, and

R signifies (i) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple bonds, (ii) Ar as defined above, or (iii) hydrogen but only if Y is not —CH_2—X—R″ wherein X represents oxy, thio, sulfinyl or sulfonyl and R″ is (a) unbranched or branched aliphatic or cycloaliphatic hydrocarbyl of up to 12 carbon atoms which is either saturated or contains one or more double and/or triple bonds or (b) Ar as defined above.

8. A process for controlling fungi or bacteria which comprises applying thereto an effective amount of a compound of claim 1.

4,210,658

AMIDINOSULPHONIC ACID DERIVATIVES

Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengeo, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

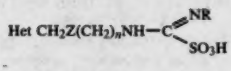
Filed Sep. 6, 1978, Ser. No. 940,063

Claims priority, application United Kingdom, Sep. 8, 1977, 37468/77

Int. Cl.[2] A61K *31/415;* C07D *233/64*

U.S. Cl. 424—273 R **4 Claims**

1. A compound of the formula:



I

where Het is an imidazolyl group optionally substituted by a lower alkyl, hydroxy, lower alkoxy, halogen, trifluoromethyl, hydroxymethyl or amino group; Z is sulphur or a methylene group; n is 2 or 3 and R is hydrogen, lower alkyl or Het $CH_2Z(CH_2)_n$—, in neutral form or in the form of a pharmaceutically acceptable salt thereof.

4. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim 1.

4,210,659

SUBSTITUTED 7-PHENYL-2,3-DIHYDRO-IMIDAZO[1,2-α]IMIDAZOLES AND SALTS THEREOF

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

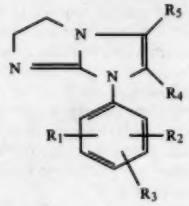
Filed Jun. 27, 1979, Ser. No. 52,566

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827617

Int. Cl.[2] **A61K** *31/415;* **C07D** *487/04*

U.S. Cl. 424—273 R **4 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3, which may be identical to or different from each other, are each hydrogen, fluorine, chlorine, bromine, methyl, methoxy or trifluoromethyl, provided that one of them is other than hydrogen; and

R_4 and R_5, which may be identical to or different from each other, are each hydrogen or methyl;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4. The method of reducing the heart rate of a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective bradycardiac amount of a compound of claim 1.

4,210,660

BENZAMIDE DERIVATIVES

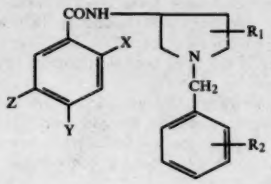
Mutsuo Takashima, Kawagoe; Sumio Iwanami, Omiya, and Shinji Usuda, Okegawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,504

Int. Cl.[2] **C07D** *207/14;* **A61K** *31/40*

U.S. Cl. 424—274 **6 Claims**

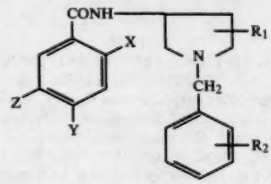
1. Benzamide compounds of the formula



wherein X represents a lower alkoxy group, Y represents a mono- or di-lower alkyl amino group; Z represents a halogen atom; R_1 represents a lower alkyl group; and R_2 represents a hydrogen atom or halogen atom;

and the pharmacologically acceptable nontoxic salts thereof.

6. A pharmaceutical composition comprising a CNS depressing-effective amount of a benzamide compound of the formula



wherein

X is a lower alkoxy group,

Y is a mono- or di-lower alkyl amino group,

Z is a halogen atom,

R_1 is a lower-alkyl group and

R_2 is a hydrogen or a halogen atom or a non-toxic salt thereof and a pharmaceutically acceptable carrier.

4,210,661

SYNTHETIC β-LACTAM COMPOUNDS, A PROCESS FOR THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Roger J. Ponsford, Horsham; Robert Southgate, Warnham, and Patricia M. Roberts, Redhill, all of England, assignors to Beecham Group Limited, England

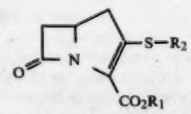
Filed Aug. 2, 1978, Ser. No. 930,225

Claims priority, application United Kingdom, Aug. 6, 1977, 33037/77

Int. Cl.[2] **C07D** *487/04;* **A61K** *31/40*

U.S. Cl. 424—274 **66 Claims**

1. A compound of the formula (II):

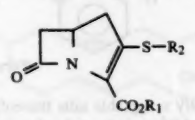


(II)

wherein R_1 is a group such that CO_2R_1 is a carboxylic acid group or a pharmaceutically acceptable salt or a lower alkyl ester, a lower alkoxyl lower alkyl ester, the benzyl ester, a lower alkoxy benzyl ester, a nitrobenzyl ester, a chlorobenzyl ester or an in-vivo hydrolyzable ester thereof selected from the group consisting of the acetoxymethyl, pivaloyloxymethyl, α-ethoxycarbonyloxyethyl and phthalidyl esters and R_2 is phenyl or phenyl substituted by one to four substituents selected from the group consisting of lower alkyl, fluorine, chlorine, bromine, CN, NO_2, COR_3, OR_3, SR_3, NH_2, $NHCOR_3$, $NHCO_2R_3$, CO_2R_3, and CO_2R_{10} wherein R_3 is lower alkyl,

benzyl, fluorobenzyl, chlorobenzyl, bromobenzyl or nitrobenzyl and CO_2R_{10} is carboxyl or a pharmaceutically acceptable salt thereof, not more than three such substituents being selected from the group consisting of fluorine, chlorine, bromine, CN, NO_2, NH_2, COR_3 and CO_2R_3 and not more than two such substituents being selected from the group consisting of CN, NO_2 and NH_2.

20. A pharmaceutical composition useful for the treatment or prophylaxis of bacterial infections in humans and animals which comprises an effective amount of a compound of the formula (II):



(II)

wherein R_1 is a group such that CO_2R_1 is a carboxylic acid group or a pharmaceutically acceptable salt or a lower alkyl ester, a lower alkoxyl lower alkyl ester, the benzyl ester, a lower alkoxyl benzyl ester, a nitrobenzyl ester, a chlorobenzyl ester or an in-vivo hydrolyzable ester thereof selected from the group consisting of the acetoxymethyl, pivaloyloxymethyl, α-ethoxycarbonyloxyethyl and phthalidyl esters and R_2 is phenyl or phenyl substituted by one to four substituents selected from the group consisting of lower alkyl, fluorine, chlorine, bromine, CH, NO_2, COR_3, OR_3, SR_3, NH_2, $NHCOR_3$, $NHCO_2R_3$, CO_2R_3 and CO_2R_{10} wherein R_3 is lower alkyl, benzyl, fluorobenzyl, chlorobenzyl, bromobenzyl or nitrobenzyl and CO_2R_{10} is carboxyl or a pharmaceutically acceptable salt thereof, not more than three such constituents being selected from the group consisting of fluorine, bromine, CN, NO_2, NH_2, COR_3 and CO_2RHD 3 and not more than two such substituents being selected from the group consisting of CN, NO_2 and NH_2, in combination with a pharmaceutically acceptable carrier.

4,210,662

SIDE CHAIN SULPHOXIDE METABOLITES

Alfred J. Eglington, Betchworth; Thomas T. Howarth, Cranleigh, and David F. Corbett, Reigate, all of England, assignors to Beecham Group Limited, England

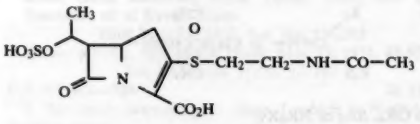
Filed May 25, 1977, Ser. No. 800,347

Claims priority, application United Kingdom, Jun. 30, 1976, 27201/76

Int. Cl.[2] C07D *487/04;* A61K *34/40*

U.S. Cl. 424—274 **12 Claims**

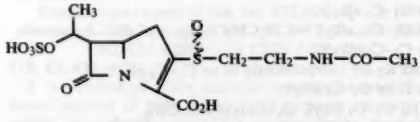
1. A compound of the formula



(IV)

or a pharmaceutically acceptable salt thereof.

5. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound for the formula



(IV)

or a pharmaceutically acceptable salt thereof.

4,210,663

HALOGEN SUBSTITUTED BENZOPYRAN- AND BENZOTHIOPYRAN-4-CARBOXYLIC ACIDS

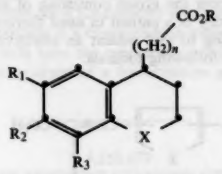
John L. Belletire, Madison, Wis., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 8, 1978, Ser. No. 959,023

Int. Cl.[2] A61K *31/38, 31/35;* C07D *311/04, 335/06*

U.S. Cl. 424—275 **25 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof, wherein X is selected from the group consisting of O, S, S=O and

;

n is zero or one;

R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms;

R_1 is selected from the group consisting of hydrogen, chloro, bromo, fluoro and phenyl;

R_2 and R_3, when taken individually, are each selected from hydrogen, alkyl of 1 to 3 carbon atoms, chloro, bromo and fluoro; and when taken together, R_2, R_3 and the carbon atoms to which they are connected form a fused benzene ring; with the proviso that at least one of R_1, R_2 and R_3 is selected from the group consisting of chloro, bromo and fluoro.

4,210,664

USE OF α,α'-DITHIOBIS(β-ARYLACRYLIC ACID) DERIVATIVES TO ENHANCE ZINC SERUM AND TISSUE CONCENTRATIONS

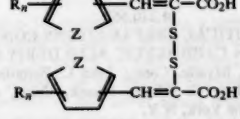
Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Mar. 2, 1979, Ser. No. 16,942

Int. Cl.[2] A61K *31/19, 31/34, 31/38, 31/40*

U.S. Cl. 424—275 **5 Claims**

1. A method of enhancing zinc serum and tissue levels in a patient in need thereof which comprises administering to said patient an effective amount of α,α'-dithiobis(β-arylacrylic acid) of the following formula



wherein Z is C=C, O, S or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, I or CF_3; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

4,210,665

USE OF α,α'-DITHIOBIS(β-ARYLACRYLIC ACID) DERIVATIVES IN HEAVY METAL POISONING

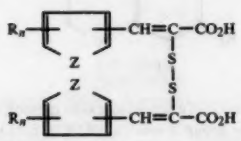
Eugene L. Giroux, Cincinnati, Ohio; Nellikunja J. Prakash, and Paul J. Schechter, both of Strasbourg, France, assignors to Merrell Toraude et Campagnie, Strasbourg, France

Filed Mar. 2, 1979, Ser. No. 16,940

Int. Cl.[2] A61K *31/19, 31/34, 31/38, 31/40*

U.S. Cl. 424—275 **5 Claims**

1. A method of combatting poisoning resulting from heavy metals selected from the group consisting of zinc, cadmium, copper and mercury in a patient in need thereof which comprises administering to said patient an effective amount of a compound of the following formula:



wherein Z is C═C, O, S, or NH; R is H, CH_3, C_2H_5, OH, CH_3O, C_2H_5O, Cl, Br, F, I, or CF_3; and n is 1, 2 or 3; or a pharmaceutically acceptable non-toxic salt thereof.

4,210,666

MUCOLYTIC THIOPHENECARBOXAMIDO ALKYL MERCAPTANS

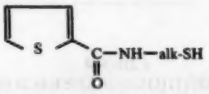
Harry R. Munson, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 932,746, Aug. 10, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,622

Int. Cl.[2] A61K *31/38;* **C07D** *333/02*

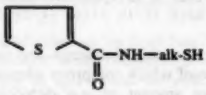
U.S. Cl. 424—275 **7 Claims**

1. A method of combating mucus build-up in a living warm-blooded animal for the purpose of alleviating lung congestion in an animal suffering therefrom by administering through inhalation an amount of a compound effective for dissolving lung mucus causing the congestion having the formula:



wherein -alk- is a straight or branched divalent alkylene radical of 2 to 4 carbon atoms.

5. A compound of the formula



wherein -alk- is a straight or branched chain alkylene radical of 2 to 4 carbon atoms.

4,210,667

PHARMACEUTICAL PREPARATIONS CONTAINING COUMARIN CARBOXYLIC ACID DERIVATIVES

Reinhard Sarges, Mystic, Conn.; John L. Belletire, Madison, Wis., and Rodney C. Schnur, Noank, Conn., assignors to Pfizer Inc., New York, N.Y.

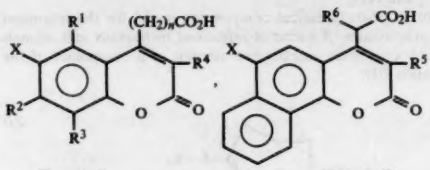
Filed Apr. 19, 1979, Ser. No. 31,564

Int. Cl.[2] A61K *31/37*

U.S. Cl. 424—281 **9 Claims**

1. A pharmaceutical preparation useful for prophylactic or remedial treatment of diabetic cataracts, retinopathy, nephropathy or neuropathy in a diabetic patient, which comprises:

a pharmaceutical carrier and a therapeutic amount of a coumarin carboxylic acid derivative selected from the group consisting of



Formula I Formula II

and the pharmaceutically acceptable salts thereof, wherein

R^1, R^2, R^3, R^4, R^5 and R^6 are independently selected from H or CH_3;

X is H, CH_3, F or Cl; and

n is 0 or 1; provided that when R^1 is CH_3, R^2 or R^3 is CH_3.

4,210,668

INSECTICIDAL CARBAMATES

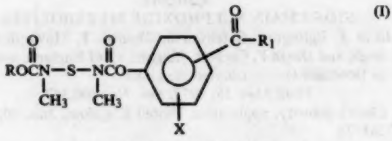
James V. Hay, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1979, Ser. No. 14,534

Int. Cl.[2] A01N *9/12;* **C07C** *119/06*

U.S. Cl. 424—298 **55 Claims**

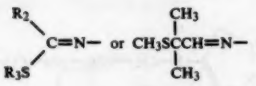
1. A compound selected from



(I)

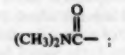
wherein

R is



R_1 is OR_4, SR_5 or NR_6R_7;

R_2 is C_1–C_3 alkyl, CH_3OCH_2— or



R_3 is C_1–C_3 alkyl;

R_4 is C_1–C_{14} alkyl, $—CH_2CH_2O)_nR_8$, or C_6H_5—;

R_5 is C_1–C_4 alkyl;

R_6 and R_7 are independently H or C_1–C_3 alkyl;

R_8 is H or C_1–C_3 alkyl;

X is H, C_1–C_9 alkyl, Cl, $(CH_3)_2N$ or OR_9;

R_9 is C_1–C_4 alkyl;

n is 1, 2 or 3.

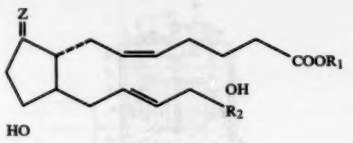
4,210,669

PROSTANOIC ACID DERIVATIVES

Hiromi Shimomura, Nishinomiya; Akihiko Sugie, Takarazuka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 30, 1978, Ser. No. 911,039
Claims priority, application Japan, May 31, 1977, 52-64217; Sep. 6, 1977, 52-107642
Int. Cl.² C07C 177/00; A61K 31/19, 31/215
U.S. Cl. 424—305 3 Claims

1. A compound of the formula



wherein

R_1 is hydrogen or C_{1-4} alkyl,

R_2 is C_{4-8} alkyl and $>C=Z$ is $>C=O$

4,210,670

ANTITHROMBOTIC AGENTS

Ernest Cooke, London, England, assignor to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Filed Jun. 23, 1978, Ser. No. 918,476
Claims priority, application Sweden, Jul. 6, 1977, 7707867
Int. Cl.² A61K 31/165
U.S. Cl. 424—324 7 Claims

1. A method for prophylactic prevention of postoperative deep venous thrombosis in mammals, including man, which are to be subjected to surgical incisions, whereby a therapeutically effective amount of a compound selected from the group consisting of 2-amino-2',6'-propionoxylidide and diethylaminoacet-2',6'-xylidide, or a therapeutically acceptable salt thereof is administered.

4,210,671

ABIETAMIDE DERIVATIVES, THEIR PRODUCTION AND USE

Hiromu Murai; Katsuya Ohata; Hiroshi Enomoto; Kenji Sempuku; Koji Kitaguchi; Yukio Fujita; Yoshiaki Yoshikuni; Kohei Kura; Katsuhide Saito; Tamiki Mori, and Yasuo Yasutomi, all of Kyoto, Japan

Filed May 12, 1975, Ser. No. 576,303
Claims priority, application Japan, May 17, 1974, 49-55758
Int. Cl.² A61K 31/16, 31/165
U.S. Cl. 424—324 31 Claims

7. An amide according to claim 1 which is N-allyldihydroabietamide.

4,210,672

PREPARATION OF YOGURT

Kosei Hata, Osaka, Japan, assignor to Seikenkai, Tondabayashi, Japan

Continuation-in-part of Ser. No. 672,959, Apr. 2, 1976, abandoned. This application Dec. 30, 1977, Ser. No. 866,396
Int. Cl.² A23C 9/12; C12K 1/08, 3/00
U.S. Cl. 426—43 5 Claims

1. A product of a dry material consisting essentially of a major amount of milk powder and a minor amount of the spores of a *Bacillus coagulans* having highly thermobiotic characteristics, the bacillus having characteristics such that:

(a) the spores are able to exist in boiling water at 100° C. for more than two minutes;

(b) the spores have the capacity to generate germ cells in a period no longer than five hours;

(c) the germ cells have the capacity such that lactic acid fermentation occurs rapidly within four hours at about 50° C.;

(d) the germ cells have characteristics such that the coagulation of milk occurs in a period no longer than five hours after the germ cells are formed;

(e) the germ cells have the capacity to produce lactic acid in the final medium in a concentration more than 0.8%, and

(f) the germ cells have the capacity to produce a final pH in the culture medium of a fermentation process of below 4.0.

4,210,673

PROCESS FOR FERMENTATION OF GREEN FODDER

Endre Kvanta, Angelholm, Sweden, assignor to AB Medipharm, Sweden

Filed Feb. 15, 1978, Ser. No. 877,983
Claims priority, application Sweden, Feb. 16, 1977, 7701687
Int. Cl.² A23K 3/02
U.S. Cl. 426—53 6 Claims

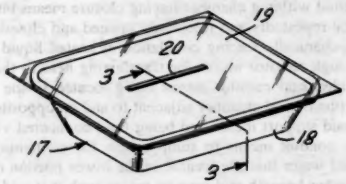
1. A process of fermentation of green fodder, wherein the green fodder is compressed to a press fodder comprising supplying to the green fodder a culture of Streptococcus faecium producing a metabiolite having anti-*E-coli*-activity, and effecting the fermentation in the presence of a nitrogen source, a source of fermentable carbohydrates and essential growth factors at a temperature of at least 15° C. until the final amount of lactic acid in the press fodder is at least 2%.

4,210,674

AUTOMATICALLY VENTABLE SEALED FOOD PACKAGE FOR USE IN MICROWAVE OVENS

Richard P. Mitchell, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 20, 1978, Ser. No. 971,318
Int. Cl.² B65D 51/16; H05B 9/00
U.S. Cl. 426—107 12 Claims



1. A refrigerated food package capable of being heated in a microwave oven, said package comprising dielectric receptacle means and dielectric cover means hermetically sealed thereover to accommodate heating of food contained therein by microwave energy, and means for venting said package automatically in response to its subjection to microwave energy, said means for venting including a strip of electrically conductive material on said cover means so shaped and dimensioned as to be heated by said microwave energy, upon heating said package, in an amount effective to produce a venting perforation in said cover means wherein said cover means is of a meltable material and the heat content of said strip of electrically conductive material is effective to raise the temperature of the underlying portion of the cover means to melt the latter in production of said venting.

4,210,675

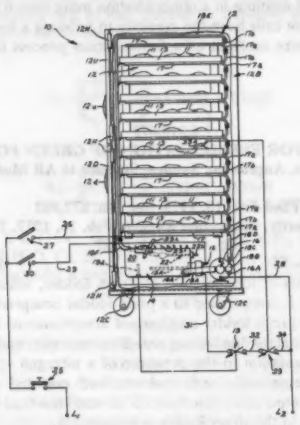
METHOD OF TRANSFERRING HEAT TO FOOD ARTICLES

Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222

Continuation-in-part of Ser. No. 835,808, Sep. 22, 1977. This application Jul. 5, 1978, Ser. No. 922,230

Int. Cl.[2] A23L *1/00*; A47F *3/00*

U.S. Cl. 426—233 **2 Claims**



1. A method of holding cooked meat food products at a temperature above 140° F. and within a range of ±5° F. within a chamber while the closure means of said chamber are repeatedly and frequently opened and closed, which method comprises:

(a) supporting cooked meat food articles on support means located within a chamber having closure means intended to be repeatedly and frequently opened and closed;

(b) mechanically forcing circulation of heated liquid water through radiator means for transferring heat to the food articles, said radiator means being located in the upper portion of said chamber adjacent to and on opposite sides of said support means and being fluid-connected via hollow conduit means to sump means for containing said liquid water that are located in the lower portion of said chamber beneath said support means such that said liquid water is both withdrawn from and returned to said sump means by said circulation thereof, with the water being heated in said sump means;

(c) maintaining the humidity within said chamber above that of the atmosphere outside of said chamber by heating the water so as to produce water vapor in said sump and controlling the amount of water vapor that is first transferred from said sump means to said chamber and, subsequently, vented from said chamber to the atmosphere by operation of means for controling flow through an opening that is provided between said sump means and said chamber and by operation of vent means provided for said chamber; and

(d) maintaining said heated liquid water at a temperature of within ±5° F. of a desired temperature that is greater than 140° F. by directly heating said liquid water with heater means located within said sump means.

4,210,676

PROCESS AND APPARATUS FOR THE ACCELERATION OF THE RIPENING OF SPIRITS

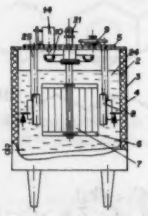
Klaus Dudar; Ewald Seliger; Gertraude Hübner, and Wilhelm Banse, all of Halle, German Democratic Rep., assignors to VEB Rationalisierung Halle, Halle, German Democratic Rep.

Filed Feb. 1, 1979, Ser. No. 8,501

Claims priority, application German Democratic Rep., Feb. 1, 1978, 203503

Int. Cl.[2] C12H *1/22*

U.S. Cl. 426—238 **10 Claims**



1. A process for acceleration of the ripening process of spirits through ultrasonic irradiation of the spirits in the presence of bouquet-improving additives, preferably wood, in which the spirit serves as the transmission medium for the ultrasonic waves, wherein the spirit liquid is circulated within a closed system and treated throughout its entire volume with an ultrasonic frequency of between 20–50 kHz and a specific ultrasonic output of about 1.7 W/l, an average ultrasonic intensity of about 0.5 W/cm^2, the liquid being in contact with a wood surface area which is dependent upon the spirit being treated and ranges between 20–40 cm^2/l, and the treatment being effected within a time period of between about 30–60 minutes while the liquid is circulated at a circulation rate of 3–4 cycles per hour.

4. An apparatus for acceleration of ripening of spirits through ultrasonic irradiation, comprising means forming at least one irradiation chamber provided with an inlet and an outlet for the spirits; resonators for introducing ultrasonic radiation into the spirits in said chamber; covers for hermetically sealing said irradiation chamber; holders attached to said covers for orienting said resonators so as to insure uniformity of irradiation and also holding wood staves serving as bouquet-improving additive; and a pump for circulating said spirits within said irradiation chamber.

4,210,677

PROCESS FOR PRODUCTION OF A RESTRUCTURED FRESH MEAT PRODUCT

Dale L. Huffman, Auburn, Ala., assignor to Auburn Research Foundation, Auburn, Ala.

Filed Jan. 24, 1978, Ser. No. 872,024

Int. Cl.[2] A23L *1/31*

U.S. Cl. 426—272 **25 Claims**

1. A method of restructuring fresh meat comprising the steps of:

providing fresh, unheated meat to be restructured;

boning said meat;

freezing said meat;

tempering said meat to an internal temperature of approximately 26° F.;

slicing said tempered meat into thin wafers;

defatting other meat;

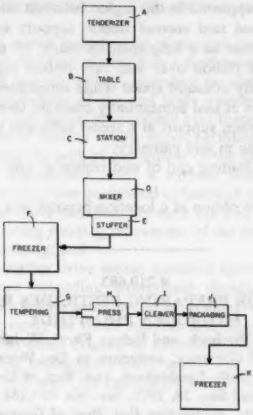
tenderizing said other meat on a mechanical tenderizer;

cutting said tenderized other meat into cubes;

removing excess connective tissue and gristle from said cubes by cutting;

combining said meat wafers and said meat cubes by mixing said meat wafers and said meat cubes;

blending said mixed meats;
preforming said blended meats into an initial desired shape;
wrapping said preformed meats with a film-like material;
freeze tempering said wrapped preformed meats such that said meats remain deformable;



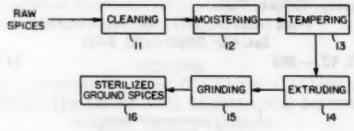
pressing said frozen meats into a final desired shape;
slicing said pressed frozen meats into a plurality of slices; and
freezing said slices.

4,210,678

METHOD OF STERILIZING SPICES

Michael J. Bayusik, and Peter H. Chen, both of Rochester, N.Y., assignors to The R. T. French Co., Rochester, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,220
Int. Cl.² A23L *3/16*
U.S. Cl. 426—521 **5 Claims**



1. A method of commercially sterilizing edible materials selected from the group consisting of herbs and spices in their raw forms by extruding them through a small opening in a die, comprising

raising the moisture level of the raw herb or spice prior to the extrusion step by mixing water with the herb or spice and allowing the mixture to stand until the moisture equilibrates in the herb or spice to a range above approximately 8–14% by weight,

heating the moistened herb or spice to a temperature above approximately 200° F. by passing it through a heating chamber without introducing any steam into the chamber, apart from that which may emanate from the moistened herb or spice, and

forcing the moistened and heated herb or spice through a die opening under an extrusion pressure in the vicinity of 200–1500 psig thereby to reduce the spore and microbiological counts of the herb or spice to satisfactory levels.

4,210,679

PROCESS FOR THE MANUFACTURE OF A MERINGUE OF IMPROVED STIFFNESS

Rene Meili, Neuhausen am Rheinfall, Switzerland, assignor to Firma Schoxi AG, Neuhausen am Rheinfall, Switzerland

Filed Oct. 20, 1978, Ser. No. 952,987
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748474
Int. Cl.² A23J *3/02*
U.S. Cl. 426—564 **1 Claim**

1. A process for the manufacture of a xylitol-containing meringue which will retain its stiffness for a prolonged period of time after whipping, said process comprising:

forming a mixture of warm water, boiled gelatine, and milk-based whipping agents;

whipping said mixture to form a stiff meringue; adding to the whipped mixture a boiling aqueous solution of xylitol under continued whipping; and

adding pulverized xylitol to the meringue while continuing the whipping of the mixture until a non-collapsing stiffness is attained;

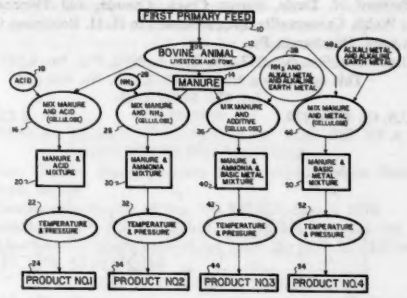
said process employing 25–35 percent by weight of water, 4–8 percent by weight of gelatine, 0.3–0.8 percent by weight of milk-based whipping agents, 20–30 percent by weight of xylitol in aqueous solution, and 30–40 percent by weight of pulverized xylitol, based on the weight of the total mixture.

4,210,680

APPARATUS AND A PROCESS FOR TREATING WASTE

Gaynor W. Dawson, Richland; Hugh C. Leiper, Enumclaw, and Arthur T. Brix, Konwenits, all of Wash., assignors to Herds, Inc., Enumclaw, Wash.

Filed Jan. 15, 1973, Ser. No. 323,886
Int. Cl.² A23K *1/00*
U.S. Cl. 426—641 **21 Claims**



1. A process for making a feed for livestock and fowl, said process comprising:

a. subjecting manure and an additive selected from the group consisting of an acid, a base, a compound comprising an alkali metal and a compound comprising an alkaline earth metal, to an elevated temperature and an elevated pressure for a suitable period of time to allow the manure and the additive to react to form a product;

b. said temperature being in the range of about 250° F. to approximately 400° F.;

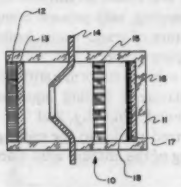
c. said pressure being in the range of about 30 pounds per square inch to, approximately, 250 pounds per square inch; and,

d. said product being said feed for said livestock and fowl.

4,210,681
METHOD OF MAKING THIN ANTIREFLECTION COATING FOR ELECTRO-OPTICAL DEVICE

Herbert K. Pollehn, Alexandria, and Jerry L. Bratton, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 906,711, May 17, 1978. This application Feb. 23, 1979, Ser. No. 14,675
Int. Cl.[2] H01J *29/28, 1/70*
U.S. Cl. 427—64 8 Claims



1. A method of making an antireflection coating for a phosphor screen with an aluminum backing for an electro-optical device having at least a photocathode capable of producing an electron image from an electromagnetic energy image in a band impinging thereon, said phosphor screen juxtaposed to said photocathode and with said aluminum layer on the side of the screen toward said photocathode, whereby an electron image on said photocathode is focussed through said aluminum layer onto said screen to induce a photoimage thereon, the method including the steps of:

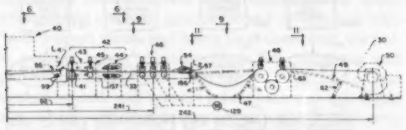
coating said backing with a thin dielectric layer, and

coating said dielectric layer with a thin metallic layer, whereby the combination of layers is transparent to electrons from said photocathode and absorbent to electromagnetic energy in the band of said electromagnetic image.

4,210,682
SHEET METAL RIBBON COATING METHOD

Bernard H. Davis, Stoney Creek, Canada, and Thomas M. Welsh, Connersville, Ind., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Division of Ser. No. 857,678, Dec. 5, 1977, Pat. No. 4,167,150. This application Nov. 14, 1978, Ser. No. 960,659
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—178 8 Claims



1. In the operation of a discontinuous strip handling apparatus, the method of threading a sheet metal ribbon along a pass line of said apparatus, extending from an uncoiling roll, over a first ribbon support, through at least one work station, over a second ribbon support to a recoiling roll so as to establish and maintain a long-span catenary in said ribbon between the first and second ribbon supports without significant waste at the leading end of said ribbon, comprising the steps of

impelling a leading end of said ribbon over said first ribbon support to a first location;

gripping said leading end of said ribbon at said first location;

impelling said ribbon over said first ribbon support at a substantially constant speed while simultaneously pulling said leading end away from said first location at a substantially constant torque, through said work station, over said second ribbon support to a second location thereby to introduce increasing tension in said ribbon as the leading end thereof approaches said second ribbon support, said increasing tension being in addition to the tension introduced by the weight of the ribbon extending between the first and second ribbon supports, said sheet metal ribbon being unsupported in the region between said first ribbon support and said second ribbon support and extending therebetween as a long-span catenary; p1 continuing to impel said ribbon over said first ribbon support at said substantially constant speed while simultaneously pulling said ribbon at said substantially constant torque over said second ribbon support at a speed sufficient to maintain a selected sag in said catenary;

freeing said leading end of said ribbon at said second location; and

recoiling said ribbon at a location beyond said second location.

4,210,683
PROCESS FOR PREPARING PESTICIDES RELEASING HYDROGEN PHOSPHIDE

Werner Praxl, Rimbach, and Reiner Ehret, Weinheim, both of Fed. Rep. of Germany, assignors to Dr. Werner Freyberg Chemische Fabrik, Laudenbach, Fed. Rep. of Germany

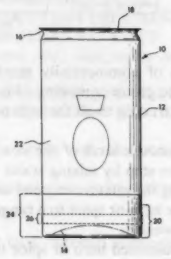
Filed Sep. 28, 1977, Ser. No. 837,154
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643814
Int. Cl.[2] B05D *7/00*
U.S. Cl. 427—221 11 Claims

1. A method for the preparation of a pesticide composition which comprises forming a mixture of particles of a pesticide which releases hydrogen phosphide on exposure to water and selected from the group consisting of alkaline earth metal phosphides, earth metal phosphides and mixtures thereof with a solution of a water soluble polymer in an anhydrous solvent containing sufficient polymer to coat the surface of said particles upon evaporation of the solvent, and thereafter evaporating the solvent.

4,210,684
PROTECTIVE COATING FOR CANS AND METHODS FOR APPLICATION OF COATING THERETO

Frank L. Shriver, Lakewood, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Mar. 29, 1978, Ser. No. 891,309
Int. Cl.[2] B05D *1/28, 5/00*
U.S. Cl. 427—286 11 Claims



1. Apparatus for simultaneously applying a thin narrow width annular coating to a portion of the outer peripheral cylindrical surface of a plurality of can body members or the like between the end edge surfaces thereof comprising:

elongated conveyor means for rotatably transporting the can body members therealong in equally spaced relationship

in a horizontal attutude along a horizontal path of movement;

elongated coating means mounted below and associated with said elongated conveyor means for simultaneously engaging and applying the thin narrow width annular coating to lowermost portions of the plurality of can body members during passage of the can body members therealong;

the coating means including an elongated coating application roller member mounted in a horizontal attitude and having an axis of rotation extending parallel to the direction of movement of the can body members and transversely to the central longitudinal axes thereof and having an elongated narrow width upper peripheral portion located along the path of movement of the can body members for engagement with a narrow width peripheral portion of the outer peripheral cylindrical surface of each of the can body members between the end edge surfaces thereof during rotating movement of the can body members therealong; and

can body member drive means mounted above said coating means and extending along said elongated conveyer means for causing rotation and movement of the can body members along the roller member and engagement therebetween to effect coating of each of the can body members during substantially only one revolution thereof and to uniformly space the can body members along the roller member.

4,210,685

POLYESTER-STARCH SIZED PAPER, SIZING COMPOSITION, AND PROCESS THEREFOR

Robert B. Login, and Daniel R. Dutton, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 22, 1978, Ser. No. 908,403
Int. Cl.[2] B05D *3/02, 3/12*
U.S. Cl. 427—361 **5 Claims**

1. A process for manufacturing surface-sized paper or paperboard having improved water resistance comprising sizing said paper at the size press with a composition comprising a degraded starch or starch derivative and a polyester wherein said polyester is the reaction product of a dicarboxylic reactant, a diol or polyoxyalkylene glycol, and a phosphorus acid reactant, said polyester having a branched chain, an average molecular weight of about 4,000 to about 11,000, and wherein said starch is selected from the group consisting of alkaline hypochlorite oxidized starches, hydroxyethyl starch ethers, cyanoethyl starch ethers and cationic starches.

4,210,686

MULTI-LAYERED PLASTIC SHEETING HAVING HIGH CLARITY, STRENGTH, AND RESISTANCE TO WATER VAPOR TRANSMISSION

Henry Gajewski, Winnetka; Dean G. Laurin, Lake Zurich; Paul Measells, Libertyville, and R. Daniel Webster, Wauconda, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 19, 1978, Ser. No. 917,122
Int. Cl.[2] B32B *1/02*; B65D *65/38*
U.S. Cl. 428—35 **21 Claims**

1. A mutliple-layered, autoclavable, flexible plastic sheet which comprises: (a) at least one first layer consisting essentially of 30 to 90 percent by weight of a block copolymer having thermoplastic, rubbery characteristics, and having rubbery polyolefin blocks consisting essentially of ethylene and butylene units and blocks of a polystyrene; the rubber polyolefin blocks comprising from 60 to 85 percent by weight of said block copolymer; and from 10 to 70 percent by weight of a polyolefin derived principally from at least one of propylene, ethylene, and 4-methylpentene-1, said polyolefin having a Vicat Softening Temperature of above 120° C.; and (b) at least one second layer consisting essentially of a polyolefin derived principally from at least one of propylene, ethylene, and 4-methylpentene-1, and being of semi-crystalline characteristic to exhibit low permeability to water vapor, said first and second layers being bonded together in alternating arrangement.

4,210,687

METHOD FOR THE COATING OF GLASS SURFACES

Johann Obendorf, Dorsten; Günter Dörmann, Bochum; Rainer Graß, and Elmar Wolf, both of Herne, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Herne, Fed. Rep. of Germany

Filed Sep. 6, 1978, Ser. No. 940,020
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740253
Int. Cl.[2] B65D *11/22*; B05D *3/02*
U.S. Cl. 428—35 **9 Claims**

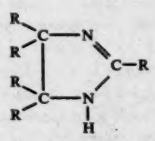
1. A method for the coating of glass surfaces, in order to prevent the scattering of glass particles, with a transparent, durpolastic protective coat by depositing a paste of hydroxy group-containing 1,2-epoxy compounds, with at least one 1,2-epoxide group in the molecule and a lower melting point of more than 40° C. and a hardening agent, and hardening the overlay at higher temperatures, which comprises

first treating the clean glass surface with an aqueous or alcoholic silane skim coat,

drying said surface if necessary and thereafter warming said surface to a temperature up to 120° C.,

coating the glass surface with said paste of hydroxy group-containing 1,2-epoxy compounds and hardening said paste with further addition of heat

wherein said hardening agents are polyisocyanates blocked with cyclic amidines of the formula:



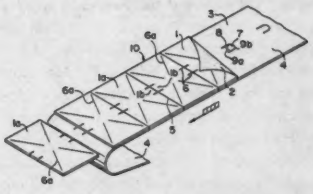
wherein R's are the same or different substituents selected from the group consisting of hydrogen, alkyl-, cycloalkyl-, arylalkyl-, and aryl, wherein the hardening agent is added in an amount of 2–15% by weight, calculated with respect to the amount of 1,2-epoxide compounds.

4,210,688

PRESSURE SENSITIVE LABEL STRIP FOR USE IN A LABEL PRINTING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Continuation-in-part of Ser. No. 867,007, Jan. 5, 1978, abandoned. This application Jul. 20, 1978, Ser. No. 926,704
Claims priority, application Japan, Mar. 28, 1977, 52-033374; Feb. 13, 1978, 53-015723[U]
Int. Cl.[2] G09F *3/00*; B65D *65/30*; B32B *3/16*
U.S. Cl. 428—41 **23 Claims**



1. A pressure sensitive label strip, comprising:
a tape like strip of label material; a tape like strip of backing

material; said strip of label material being overlaid on and separably adhered by adhesive material to said strip of backing material;

parting cut lines extending transversely across said strip of label material and being spaced at regular intervals so as to form a plurality of unit label pieces of said label strip material;

a plurality of first feeding tongues arrayed at spaced intervals along the length of said strip of backing material; each said first tongue of said plurality being at a position corresponding to the position of a said parting cut line on said strip of label material; each said first feeding tongue being defined by a feeding cut through said strip of backing material; each said first feeding tongue feeding cut being in the shape of an unclosed geometric figure and having an open uncut side by which said feeding tongue is connected to said strip of backing material; said open uncut sides of said first feeding tongue feeding cuts all facing downstream along the path of motion of said strip as said strip is advanced, whereby when each said first feeding tongue is engaged, it is upraised in the forward direction of the motion of said label strip;

at least one respective feeding cut line, which is formed at and which crosses each said parting cut line in said strip of label material; said at least one feeding cut line at each said parting cut line having generally the same shape as said at least one feeding cut line at the other said parting cut lines; each said at least one feeding cut line in combination with its respective said parting cut line, being differently shaped than said feeding cut of a respective said first feeding tongue, thereby to define a second feeding tongue in said strip of label material at each said parting cut line; each said second feeding tongue being placed to overlie a respective said first feeding tongue of said strip of backing material.

17. A pressure sensitive label strip, comprising:

a tape-like strip of a label material having a rear side and a tape-like strip of backing material having a front side; said rear side of said strip of label material and said front side of said strip of backing material being separably adhered together by adhesive material;

a plurality of parting cut lines extending transversely across said strip of label material and being spaced at regular intervals so as to form a plurality of unit label pieces of said label material;

pairs comprising two first feeding cut lines being defined across said parting cut lines in said label material; said two feeding cut lines of each said pair being separated sufficiently that said label material will not normally tear to define an unclosed geometric figure including said two feeding cut lines and the tear; each said feeding cut line pair and the respective said parting cut line forming respective feeding tongues of said unit label pieces;

second feeding cut lines being defined in said backing material and each being in the shape of an unclosed geometric figure to form a respective feeding tongue in said backing material at a position generally corresponding to a respective said pair of first feeding cut lines of said label material, and the positions of said second feeding cut lines of said backing material not being in accurate alignment with the respective said pairs of first feeding cut lines of said label material.

4,210,689

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

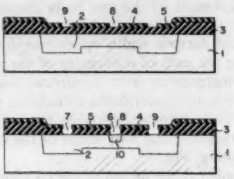
Shigeru Komatsu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 13, 1978, Ser. No. 969,007

Claims priority, application Japan, Dec. 26, 1977, 52-156812; Dec. 26, 1977, 52-156813

Int. Cl.[2] H01L *21/38*

U.S. Cl. 427—88 13 Claims



1. A method of producing semiconductor devices, comprising the steps of:

forming a first insulation film on a semiconductor substrate of one conductivity type having a first semiconductor region of the opposite conductivity type formed therein in advance, said first semiconductor region being exposed to the surface of the substrate and said first insulation film covering the first semiconductor region;

forming a second insulation film on the first insulation film, said second insulation film having a property which permits it to be etched 3 to 10 times as fast as said first insulation film;

providing the second insulation film with at least one hole;

converting said second insulation film to have a property which permits it to be etched at substantially the same rate as said first insulation film;

forming a nitride film over the remaining second insulation film and within the hole in the second insulation film;

providing that portion of the nitride film which is located in the hole of the second insulation film with at least one opening selectively exposing the first insulation film;

providing the first insulation film with an opening through the opening in the nitride film so as to expose selectively the surface of the first semiconductor region formed in the substrate; and

forming a second semiconductor region of said one conductivity type within the first semiconductor region by utilizing the opening in the first insulation film.

4,210,690

SPUN NONWOVEN FABRIC OF POLYESTER FILAMENTS FOR USE AS BACKING MATERIAL FOR A DEEP-DRAWABLE TUFTED CARPET

Ludwig Hartmann, and Ivo Ruzek, both of Kaiserslautern, Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,287

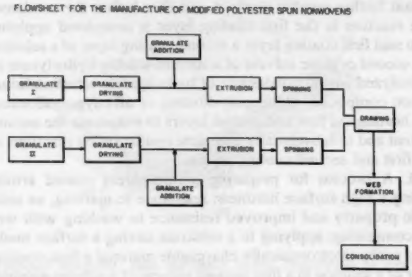
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834438

Int. Cl.[2] D05C *17/00*

U.S. Cl. 428—95 7 Claims

1. A spun nonwoven fabric of polyester filaments for use as backing for a deep-drawable tufted carpet, wherein the polyes-

ter filaments have uniformly distributed therethrough about 0.1 to 1% by weight of a diol-modified copolyester containing



units of at least two different diols; the diol composition of the copolyester differing from that of the polyester.

4,210,691

PHOTOCHEMICAL PROCESS FOR TREATING NYLON FIBER YARN OR PILE FABRIC

Nicholas C. Bolgiano, 824 Dorsea Rd., Lancaster, Pa. 17601, and Daniel Swern, 7700B Stenton Ave., Philadelphia, Pa. 19118

Filed Dec. 18, 1978, Ser. No. 970,352
Int. Cl.[2] B32B *7/04*
U.S. Cl. 428—96 **7 Claims**

1. A photochemical process for imparting soil release properties to nylon fiber yarn or pile fabric which comprises treating the nylon fiber yarn or pile fabric with an effective amount of a N-halogenating agent to break at least a portion of the amide hydrogen bonds on the amide linkages along the nylon molecular chain and form in place thereof photolabile nitrogen-halogen bonds; treating the resulting halogenated nylon fiber yarn or pile fabric having photolabile nitrogen-halogen bonds with a vinyl monomer and irradiating the vinyl monomer treated nylon fiber yarn or pile fabric with sufficient actinic or electron beam radiation to

(a) break the photolabile nitrogen-halogen bonds and form free radical host sites along the nylon molecular chain and

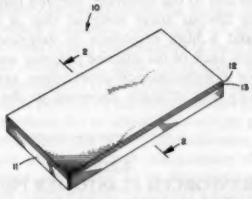
(b) subsequently graft the vinyl monomer onto the nylon molecular chain at the free radical host sites.

4,210,692

OVERLAY SHEET AND WOOD LAMINATE

Reinhard D. Bohme, Bloomington, and Robert O. Ragan, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 17, 1978, Ser. No. 961,755
Int. Cl.[2] D21H *5/18, 5/20*; B32B *21/02, 21/10, 21/06*
U.S. Cl. 428—106 **8 Claims**



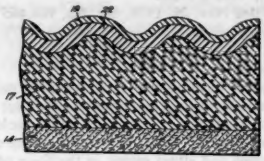
5. A laminate comprising a wood core and an overlay sheet adhered to at least one surface of said core, said overlay sheet formed from a furnish comprising, for each 100 parts by weight, 10 to 25 parts of a synthetic pulp comprising a synthetic polymer in fibrous form, 10 to 20 parts mineral fiber, 0.1 to 2 parts size, 0.1 to 2 parts wet strength resin, and 79.8 to 51 parts wood fiber.

4,210,693

REGISTER EMBOSS AND METHOD

Ernest E. Regan, Fort Lauderdale, and Thomas J. McCann, Hollywood, both of Fla., assignors to Dowdflor Corporation, Miami, Fla.

Filed Dec. 20, 1977, Ser. No. 862,627
The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.
Int. Cl.[2] B32B *3/00*; B05D *3/06*
U.S. Cl. 428—152 **6 Claims**



1. The process for providing a crinkle finish on a decorative pattern on a flexible substrate comprising the steps of:

coating said substrate with a foamable vinyl composition and heating to gel the foamable composition,

applying a decorative pattern to the surface of the gelled composition,

coating a vinyl overlay over the decorative pattern,

heating to gel the vinyl overlay,

passing the flexible coated substrate through a printer where an actinic radiation curable coating of lower elongation properties than that of the vinyl overlay is applied at varying thicknesses in preselected areas of the substrate in register with the decorative pattern,

curing said coating upon exposure to actinic radiation,

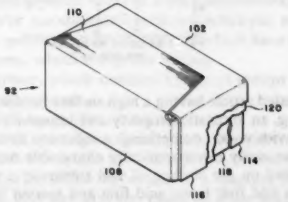
passing the flexible coated substrate through a fusion and expansion oven, whereby upon exiting, the foamable coat has expanded to a cellular foam, the vinyl overlay is fused, and the product exhibits a crinkled surface texture which has been created on the surface of the flexible substrate by permitting the differential elongation properties of the overlay and the printed actinic radiation cured coatings to interact to give the crinkle surface texture.

4,210,694

LAMINATED COMPOSITE STRUCTURAL FITTING AND METHOD OF MAKING

Lawrence D. Fogg, III, Burbank, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed May 9, 1977, Ser. No. 795,286
Int. Cl.[2] B32B *3/00, 27/04, 27/12*
U.S. Cl. 428—174 **7 Claims**



5. A laminated composite structural fitting comprising: a ply of oriented, high strength, filament-reinforced, thermosetting resin-impregnated material, said filament being in the nature of graphite, boron or glass, said ply having a bottom panel and a

side panel adjacent to and integrally formed with said bottom panel and separated therefrom by a fold line, and first and second end panels respectively adjacent to said bottom panel and said side panel and separated therefrom by fold lines, said fitting having said end panels overlapping and laminated to each other to form a homogeneous filament reinforced corner for stress distribution around the corner from said end panel through said side panel to said bottom panel.

4,210,695

METHOD OF FORMING COLORED PATTERNS ON ALUMINUM OR ITS ALLOYS

Hatsuo Hirono, Nyuzen; Katsuyuki Nagata, Vozu, and Nobushige Doguchi, Toyama, all of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,465
Claims priority, application Japan, Dec. 5, 1977, 52-145191
Int. Cl.[2] C23B 9/02
U.S. Cl. 428—209 **6 Claims**

1. A method of forming a textured, colored pattern on the surface of an article made of aluminum or its alloys comprising:

dipping said article in a coating bath which includes a resinous coating material, selected from the group consisting of acrylic resins and alkyd resins, in the form of multilinear or multiannular patterns floated thereon to deposit a mask coating in a wood-grain pattern on a surface of said article;

applying an alkaline solution to said surface to deeply etch the unmasked areas to form a textured surface;

removing the mask coating; and

electrolytically coloring said surface, including both the etched and previously masked portions.

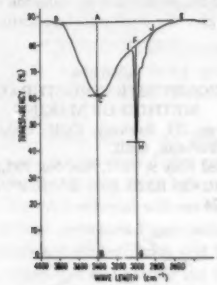
6. An aluminum article produced by the method of claim 1, which has a close resemblance to a straight or cross grain of natural wood with a stereographic effect.

4,210,696

ANTISTATIC COMPOSITE FILM AND PROCESS FOR THE PREPARATION THEREOF

Tadayoshi Ikeda, Kobe; Yasuzi Omori, and Saizo Ikeda, both of Himeji, all of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Nov. 27, 1978, Ser. No. 963,834
Claims priority, application Japan, Nov. 28, 1977, 52-142416
Int. Cl.[2] B32B 7/02, 27/36
U.S. Cl. 428—212 **14 Claims**



1. A coated article having a high surface hardness, resistance to marring, an antistatic property and improved resistance to washing with water, comprising: a substrate having a surface made of an easily electrostatically chargeable material; a first layer coated on the surface of said substrate; a second layer coated on said first layer; said first and second layers having been prepared by applying onto said surface of said substrate a first coating layer of a solution in a first organic solvent of a solvent-soluble, further-curable product obtained by partial hydrolysis and condensation of alkyltrialkoxysilane having the formula $R^1Si(OR^2)_3$, wherein R^1 is alkyl having 1 to 4 carbon atoms, phenyl or vinyl and R^2 is alkyl having 1 to 4 carbon atoms or phenyl, and drying said first coating layer to evaporate said first organic solvent and to begin further condensation of said further-curable product, and then before the condensation reaction in the first coating layer is completed applying onto said first coating layer a second coating layer of a solution in a second organic solvent of a solvent-soluble hydrolyzate or hydrolyzed partial condensate of hydrolyzable tetrafunctional silicon compound, chloropolysiloxane or alkoxypolysiloxane, and heating the first and second layers to evaporate the second solvent and to substantially complete condensation reactions in the first and second coating layers.

11. A process for preparing a transparent coated article having a high surface hardness, resistance to marring, an antistatic property and improved resistance to washing with water, comprising: applying to a substrate having a surface made of an easily electrostatically chargeable material a first coating layer of a solution in a first organic solvent of a solvent-soluble, further-curable product obtained by partial hydrolysis and condensation of alkyltrialkoxysilane having the formula $R^1Si(OR^2)_3$, wherein R^1 is alkyl having 1 to 4 carbon atoms, phenyl or vinyl and R^2 is alkyl having 1 to 4 carbon atoms or phenyl, and drying said first coating layer to evaporate said first organic solvent and to begin further condensation of said further-curable product, and then before the condensation reaction in the first coating layer is completed applying onto said first coating layer a second coating layer of a solution in a second organic solvent of a solvent-soluble hydrolyzate or hydrolyzed partial condensate of hydrolyzable tetrafunctional silicon compound, chloropolysiloxane or alkoxypolysiloxane and heating the first and second layers to evaporate the second solvent and to substantially complete the condensation reactions of the first and second coating layers.

4,210,697

PROCESS FOR PREPARING HYDROPHOBIC POROUS FIBROUS SHEET MATERIAL OF HIGH STRENGTH AND POROSITY AND PRODUCT

Joseph G. Adiletta, Thompson, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Sep. 15, 1978, Ser. No. 942,505
Int. Cl.[2] B32B 27/04
U.S. Cl. 428—272 **22 Claims**

1. A process for preparing a hydrophobic porous fibrous sheet material which comprises impregnating a substrate of porous fibrous sheet material with an aqueous dispersion consisting essentially of at least one polymer selected from the group consisting of polytetrafluoroethylene and polytrifluorochloroethylene in an amount within the range from about 2 to about 40% by weight of the emulsion, and a silicone resin prepolymer in an amount within the range from about 0.1 to about 8% by weight of the emulsion; and drying the substrate at a temperature above about 525° F. to cure the silicone resin prepolymer, forming a hydrophobic polymer, and sinterbond the polytetrafluoroethylene or polytrifluorochloroethylene thereto and to the substrate, thereby forming a hydrophobic porous fibrous sheet material that is inert, has a high strength and a high resistance to deterioration at elevated temperature; each of the silicone polymer and polytetrafluoroethylene or polytrifluorochloroethylene synergizing the hydrophobicity and strength imparted to the substrate by the other.

4,210,698

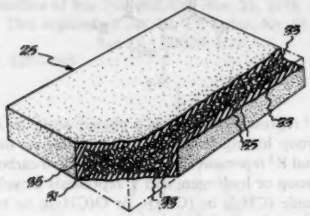
REINFORCED ELASTOMER PRODUCTS

Stewart C. Watson, Williamsville, N.Y., assignor to Watson Bowman Associates, Inc., Amherst, N.Y.

Continuation-in-part of Ser. No. 616,140, Sep. 24, 1975, Pat. No. 4,080,086. This application Mar. 21, 1978, Ser. No. 888,660
Int. Cl.[2] B32B 5/16
U.S. Cl. 428—327 **4 Claims**

1. A reinforced elastomer product suitable for use as a resil-

ient but pressure resistant bearing block comprising a body of relatively soft elastomer having embedded therein a plurality of separate reinforcing elements of relatively hard, not easily



crushed material, said elements being fragments of crushed rock and being present in sufficient quantity as to be effective to reduce the deformation of said product by compressive forces.

4,210,699

ABRASION RESISTANT SILICONE COATED POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,874

Int. Cl.[2] G02B *1/04;* B32B *27/30, 27/14*

U.S. Cl. 428—331 **26 Claims**

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having on at least one surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic acrylic polymer containing functional groups; and (ii) having disposed on said primer layer a tenaciously and durably adhered top coat consisting essentially of a colloidal silica filled thermoset organopolysiloxane which is the condensation product of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methacryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$.

4,210,700

PRODUCTION OF POLYESTER YARN

Robert M. Marshall, Chester, and Emon C. Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 15, 1978, Ser. No. 942,583

Int. Cl.[2] D02G *3/48;* B05D *1/24;* B32B *17/04*

U.S. Cl. 428—395 **3 Claims**

1. A synthetic filamentary yarn comprised of polyethylene terephthlate filaments which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylarylsulfonate, about 1.0 to about 3.0 weight percent of said composition of dinonylsodium-sulfosuccinate, and about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between about 265° C. (510° F.) and 327° C. (620° F.) and a viscosity of between 38 to 40 SSU at about 38° C. (100° F.) wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn; and then said yarn is treated with from about 0.7 to about 1.2 weight percent based on the weight of said yarn of a liquid composition which is an oil-in-water emulsion of about 10 to 20 percent by weight of said oil portion, said oil portion consisting essentially of from about 55 to 65 percent by weight of coconut oil, about 20 to 35 percent by weight of polyoxyethylene hydrogenated castor oil, and about 7 to 15 percent by weight of phosphated polyoxyethylated tridecyl alcohol, neutralized with potassium hydroxide.

4,210,701

METHOD AND APPARATUS FOR DEPOSITING FILM ON A SUBSTRATE, AND PRODUCTS PRODUCED THEREBY

Joseph E. Berg, and Randolph E. Brown, Jr., both of Los Angeles, Calif., assignors to Precision Thin Film Corporation, Los Angeles, Calif.

Division of Ser. No. 571,480, Apr. 24, 1975, Pat. No. 4,017,350, which is a division of Ser. No. 280,489, Aug. 14, 1972, Pat. No. 3,913,520. This application Jul. 31, 1978, Ser. No. 929,733

Int. Cl.[2] C23C *13/12;* B05D *3/06;* B32B *31/28*

U.S. Cl. 428—409 **9 Claims**

1. A product having at least a portion thereof produced by the bombardment of a substrate by ionized molecular particles of a selected material comprising:

a specimen substrate;

a film deposited on and implanted in said substrate, said implantation occurring to a depth of from severl hundred angstroms to several microns.

4,210,702

PROCESS FOR THE MANUFACTURE OF SOLUBLE COPOLYMERS WHICH CONTAIN HYDROXYL GROUPS AND WHICH COPOLYMERS CAN BE CROSSLINKED WITH ORGANIC POLYISOCYANATES

Horst Dalibor, Norderstedt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 760,360, Jan. 9, 1977, Pat. No. 4,163,836. This application Aug. 18, 1978, Ser. No. 934,868

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1976, 2603259

Int. Cl.[2] B32B *27/38;* B05D *3/02;* C08F *212/08*

U.S. Cl. 428—413 **23 Claims**

1. A process for the manufacture of coatings from polyhydroxy compounds, which are based on copolymers, which contain hydroxyl groups and are reaction products of mixtures of styrene, methyl methacrylate, hydroxyethyl methacrylate, acrylic acid and glycidyl esters of α-alkylalkanemonocarboxylic acids and/or α,α-dialkylalkanemonocarboxylic acids, and from organic polyisocyanates in solvents which have no active hydrogen atoms, which comprises mixing

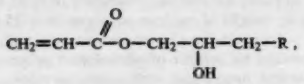
A. a copolymer, which contains hydroxyl groups and consists of components

(a) 26–28% by weight of styrene,

(b) 20–22% by weight of methyl methacrylate,

(c) 18–20% by weight of hydroxyethyl methacrylate,

(d and e) 32.5–35.5% by weight of a reaction product of acrylic acid and glycidyl esters of acids selected from the group consisting of α-alkylalkanemonocarboxylic acids and α,α-dialkylalkanemonocarboxylic acids, having the empirical formula $C_{13}H_{24}O_3$, which reaction product has the formula



wherein R is the radical of an α-alkylalkanemonocarboxyl acid or an α,α-dialkylalkanemonocarboxylic acid and the radical has the empirical formula $C_{10}H_{19}O_2$, and in which the incorporated components (a), (b), (c), (d) and (e) add up to 100% by weight, dissolved in solvents which do not contain active hydrogen atoms, is reacted with (B) an organic polyisocyanate, the amounts of the copolymer (A) and the polyisocyanate (B) in the mixture adding up to 100 percent by weight, and applying this mixture to a substrate to be coated, and then removing the solvent in order to obtain the finished coating.

16. An article coated according to the process of claim 1.

4,210,703

POLYESTER-FILM BACKED MAGNETIC RECORDING TAPE HAVING EPOXY SUBBING LAYER

William M. Scantlin, Woodbury, and Lawrence M. Clemens, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 11, 1979, Ser. No. 2,790
Int. Cl.² B32B *27/38*
U.S. Cl. 428—413 **14 Claims**

1. In magnetic recording tape having a biaxially oriented polyester film backing, a magnetizable coating and a subbing layer between the magnetizable coating and film backing, the improvement comprising:

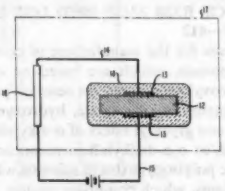
the subbing layer comprises a cationically polymerized epoxy resin.

4,210,704

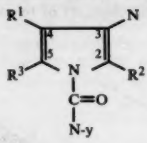
ELECTRICAL DEVICES EMPLOYING A CONDUCTIVE EPOXY RESIN FORMULATION AS A BONDING MEDIUM

Edwin A. Chandross, Berkeley Heights, and Louis H. Sharpe, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1978, Ser. No. 931,160
Int. Cl.² B32B *7/14, 27/38;* H01B *1/06*
U.S. Cl. 428—414 **4 Claims**



1. Device comprising a first electrically conductive or semiconducting member and a second electrically conductive or semiconducting member, said first member being bonded to said second member by a bonding agent, said bonding agent consisting essentially of (a) a polyfunctional epoxide, (b) a reactive viscosity reducer which is a mono or difunctional aliphatic diglycidyl ether, (c) a curing agent, and (d) a conductive material, characterized in that said curing agent consists essentially of an imidazole compound having the general formula



wherein R^1 represents hydrogen, a phenyl group or an alkoxyphenyl group having from 1–6 carbon atoms in the alkoxy chain; R^2 and R^3 represent an alkyl group of 1–6 carbon atoms, a phenyl group or hydrogen; and Y represents a cyclic group of the formula $(CH_2)_4$ or $(CH_2)_5$, or $O(CH_2)_4$; or two alkyl groups, $(R^4)_2$, wherein R^4 is an aklyl group having from 1–6 carbon atoms.

4,210,705

POLYVINYL BUTYRAL COMPOSITIONS

Harold K. Inskip, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 874,612, Feb. 2, 1978. This application May 3, 1979, Ser. No. 35,644
Int. Cl.² B32B *27/00;* D01F *1/02*
U.S. Cl. 428—500 **3 Claims**

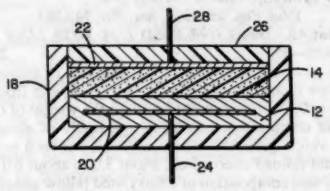
1. In the process for the preparation of a plasticized polyvinyl butyral sheeting suitable for use in safety glass laminates, the improvement which comprises immersing the polyvinyl butyral sheeting in a solution of divalent metal salt of neo decanoic acid wherein the metal is magnesium or calcium wherein the amount of said neo decanoic acid salt incorporated into the polyvinyl butyral is about from 0.01–0.5 wt. percent based on plasticized polyvinyl butyral.

4,210,706

CATHODE MATERIALS FOR ELECTROCHEMICAL CELLS

Paul M. Skarstad, Wayzata, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1979, Ser. No. 34,266
Int. Cl.² H01M *4/36, 6/18*
U.S. Cl. 429—105 **8 Claims**



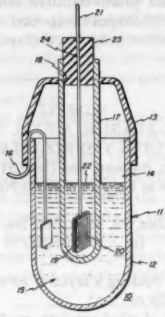
1. As a cathode material for electrochemical cells, a combination consisting essentially of a conductive saturated liquid solution comprising two initial components and any reaction product thereof, one of the initial components being an organic compound selected from the group of pyridine derivatives consisting of dimeric pyridine, monomeric substituted pyridines, dimeric substituted pyridines, monomeric quinoline, monomeric substituted quinolines, trimeric substituted pyridines, and mixtures thereof, and the other initial component being iodine dissolved therein.

4,210,707

SEALED LITHIUM-TYPE ELECTROCHEMICAL CELL

Gregory C. Farrington, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 962,009, Nov. 20, 1978, abandoned.
This application Jul. 16, 1979, Ser. No. 58,066
Int. Cl.[2] H01M *4/36*
U.S. Cl. 429—105 4 Claims



1. A sealed lithium electrochemical cell comprising a casing, an anode positioned within the casing, the anode selected from the class consisting of lithium, lithium as an amalgam, lithium in a non-aqueous electrolyte, a lithium-alloy with from 1.0 weight percent to 99.0 weight percent lithium, a lithium-alloy as an amalgam, and a lithium alloy in a non-aqueous electrolyte, a cathode positioned within the casing, the cathode functioning with the anode, a solid lithium-sodium beta″-alumina electrolyte positioned within the casing between the anode and the cathode, the solid lithium-sodium beta″-alumina having the formula

$$y(LiNa)O.nX.5Al_2O_3$$

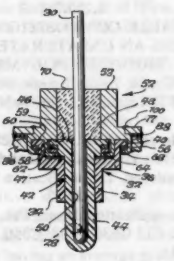
wherein y is a range from 0.55 to 1.0; X is an oxide selected from the group consisting of MgO, Li_2O, $m(MgO)p(Li_2O)$ wherein the total of m and p equal n; n is a range from 0 to 1.0; and 1.0 to 99.0 percent of the total alkali ion content is lithium.

4,210,708

LITHIUM-IODINE CELL

Ralph T. Mead, Kenmore; Norbert W. Frenz, Jr., North Tonawanda; Frank W. Rudolph, Depew, and Wilson Greatbatch, Clarence, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Mar. 30, 1978, Ser. No. 891,636
Int. Cl.[2] H01M *2/06*
U.S. Cl. 429—181 33 Claims



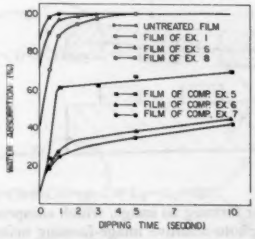
1. A lithium-iodine cell comprising:
a. a casing of electrically conducting material;
b. anode means positioned within said casing and comprising an element of lithium having an exposed surface portion and another surface portion;
c. electrical conductor means operatively connected to said other surface portion and extending through said casing;
d. means for sealing said conductor means from the remainder of said cell, said sealing means comprising an insulator element in generally concentric relationship with said conductor within said casing, said insulator element having an axial end face portion and being of a material which does not exhibit electronic conduction when exposed to iodine, an isolator element of a material which does not exhibit electronic conduction when exposed to iodine and located between said insulator element and said conductor, said isolator element having an axial end face portion substantially coplanar with said axial end face portion of said insulator element, and a ferrule element in generally concentric relationship with said conductor, said ferrule having one end within said casing and having a portion extending from said casing, said end of said ferrule within said casing having an axial end face portion abutting said axial end face portions of said insulator and said isolator, said ferrule including a first formation extending generally axially outwardly from said ferrule end face portion and generally radially inwardly engaging said isolator element for joining said ferrule to said isolator, said ferrule including a second formation located radially outwardly of said first formation extending generally axially outwardly from said ferrule end face portion and generally radially inwardly engaging said insulator for joining said ferrule to said insulator;
e. cathode means comprising iodine-containing material within said casing and in operative contact with said exposed surface portion of said lithium element and with a major portion of the surface of said casing in a manner such that said casing serves as a cathode current collector; and
f. said sealing means shielding said conductor means from said iodine-containing material and electrically insulating said conductor means from said casing;
g. whereby an electrical potential difference exists between said conductor means and said casing during operation of said cell.

4,210,709

MICROPOROUS FILM BATTERY SEPARATOR

Yoshinao Doi, Kawasaki; Osamu Fugii, Tachikawa; Shigeo Kaneko, and Takeo Hanamura, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1978, Ser. No. 929,983
Int. Cl.[2] H01M *2/16*
U.S. Cl. 429—250 48 Claims



1. A microporous film which comprises a matrix comprising 40 to 90 volume percent of a polyolefin having a number average molecular weight of 15,000 or more and 10 to 60 volume percent of an inorganic filler, said matrix having therein void spaces at a rate of 30 to 75 volume percent based

on the volume of the film; and 2 to 20 weight percent, based on the total weight of the polyolefin and the inorganic filler, of an organic substance which is substantially insoluble in and inert to sulfuric acid and has a solubility parameter ranging from 7.3 inclusive to 8.4 exclusive; said organic substance, in its majority, adhering to the overall surface of the film including the outer surfaces of the film and the surfaces of the polyolefin walls defining said void spaces in cooperation with said inorganic filler; said microporous film being prepared by a method comprising blending said polyolefin, said inorganic filler, and an organic liquid having a solubility parameter ranging from 8.4 to 9.9 inclusive in amounts of 10 to 60 volume percent, 7 to 42 volume percent, and 30 to 75 volume percent, respectively, based on the whole volume of the polyolefin-filler-organic liquid composition, the amount of the polyolefin being ⅓ to 9 multiple of the amount of the inorganic filler; subjecting the resulting blend to molding to form a film; extracting from said film the organic liquid to form a matrix which comprises 40 to 90 volume percent of the polyolefin and 10 to 60 volume percent of the inorganic filler and having therein void spaces at a rate of 30 to 75 volume percent based on the volume of the film; and applying to the matrix the organic substance which is substantially insoluble in and inert to sulfuric acid and has a solubility parameter ranging from 7.3 inclusive to 8.4 exclusive so that said organic substance adheres to the overall surface of the film in an amount of 2 to 20 weight percent based on the total weight of the polyolefin and the inorganic filler.

4,210,710
PHOTOCONDUCTOR OF VARYING LIGHT SENSITIVITY FROM CENTER TO EDGES

William E. Bixby, Deerfield, Ill., assignor to A. B. Dick Company, Niles, Ill.

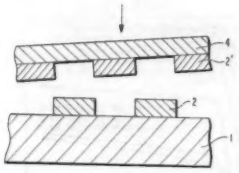
Filed Jun. 26, 1978, Ser. No. 919,089
Int. Cl.[2] G03G *5/04, 5/082*
U.S. Cl. 430—56 **7 Claims**

1. A photoconductor comprising a substrate and a photoconductive layer on the substrate characterized by a sensitivity to light which is greater in the outer edge portions of the photoconductive layer than at the central portion of the photoconductive layer in which said photoconductive layer increases in light sensitivity from said central portion to said outer edge portions.

4,210,711
PROCESS FOR FORMING AN IMAGE

Masao Kitajima; Hiromichi Tachikawa; Fumiaki Shinozaki, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1978, Ser. No. 966,996
Claims priority, application Japan, Dec. 6, 1977, 52-145684
Int. Cl.[2] G03C *11/12, 5/00*
U.S. Cl. 430—253 **18 Claims**



1. A process for forming an image, which comprises imagewise exposing a photo-sensitive image-forming material composed of a support and a layer of a thermoplastic photo-sensitive composition which is not adhesive at ordinary temperatures, heating the exposed photo-sensitive material in intimate contact with a peeling development carrier sheet at least one surface of which is composed of a thermoplastic material not adhesive at ordinary temperature to a temperature above the softening temperature of at least one of the photo-sensitive composition layer and the peeling development carrier sheet, and then peeling development carrier sheet from the photo-sensitive image-forming material at about or below said heating temperature thereby to form the exposed or unexposed area of the photo-sensitive composition layer on the peeling development carrier sheet, and the corresponding unexposed or exposed area on the support, respectively as a separate image wherein said photo-sensitive composition contains a photo-sensitive polyhalogen compound, a photo-sensitive quinone, a photo-sensitive polymer, a silver halide or an organic silver salt.

4,210,712
ADHESIVE-BEARING METAL SHEET WITH PHOTOPOLYMERIZABLE LAYER

Stanley H. Munger, Rumson, and Herbert J. Pine, Edison, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 14, 1978, Ser. No. 915,312
Int. Cl.[2] G03C *1/94*
U.S. Cl. 430—275 **7 Claims**

1. A metal sheet bearing a layer of an adhesive composition consisting essentially of

(a) A copolymer of ethyl acrylate, methyl methacrylate and acrylic acid, 17 to 98 parts by weight;

(b) a copolymer of styrene and a maleate ester taken from the group of secondary butyl maleate and isobutyl maleate, 1.7 to 67 parts by weight.

(c) aqueous colloidal silica, 1.4 to 11.7 parts by weight; and

(d) an aqueous acrylic latex of a self-curing interpolymer of

(1) from 90 to 99.9% by weight of at least one ester having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-COOR'$$

wherein R is a member of the class consisting of hydrogen, an alkyl radical having from 1 to 4 carbon atoms, a halogen and a cyano group and R′ represents an alkyl radical having from 1 to 4 carbon atoms, (2) from 0 to 5% by weight of an alpha,-beta-monoolefinically unsaturated nitrile, (3) from about 0.1 to 5% by weight of an alpha,beta-olefinically unsaturated monocarboxylic acid and (4) from about 0 to 5% by weight of an N-alkylol amide of an alpha,beta-olefinically unsaturated carboxylic acid having from 4 to 10 carbon atoms, 2 to 7.5 parts by weight;

(e) a pigment, 0 to 7.0 parts by weight; and

(f) an antifoaming compound, 0 to 1.0 part by weight, the adhesive bearing metal sheet adhered to an aqueous soluble photopolymerizable layer.

4,210,713
PHOTO-CURABLE COMPOSITION FOR COATING CONTAINING AN UNSATURATED URETHANE MODIFIED POLYMER

Iwao Sumiyoshi, Osaka; Tamio Iimure, Suita, and Akio Tomotsugu, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 648,805, Jan. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 437,217, Jan. 28, 1974, abandoned. This application May 4, 1978, Ser. No. 902,817
Claims priority, application Japan, Feb. 1, 1973, 48-13288
Int. Cl.[2] G03C *1/68;* C08G *18/00*
U.S. Cl. 430—284 **13 Claims**

1. A photo-curable composition having a high hiding power which comprises

(1) a photo-curable, urethane-modified polymer having at least one unsaturation unit of an acrylate or methacrylate type moiety in the side chain and a molecular weight such

that the weight of the polymer per single unsaturation unit is 200–10,000, said photocurable, urethane-modified polymer being produced by reacting (A) an isocyanate compound having at least one unsaturation unit of an acrylate or methacrylate type moiety with (B) a polymer having at least one active hydrogen atom, said isocyanate compound (A) being produced by reacting (C) an acrylate or methacrylate compound having at least one acrylate or methacrylate moiety and at least one active hydrogen atom with (D) a polyfunctional isocyanate having isocyanate groups bonded directly to the carbon atom,

(2) an α,β-ethylenically unsaturated compound,

(3) a photo-sensitizer, and

(4) a coloring agent having ultraviolet ray transmitting properties, wherein the weight ratio of the photo-curable, urethane-modified polymer (1), the α,β-ethylenically unsaturated compound (2) and the photo-sensitizer (3) is 20–99:80–1:0.01–20 and wherein the amount of coloring agent is 3 to 50 parts by weight to 100 parts by weight of the combined amount of the photo-curable, urethane-modified polymer (1), the α,β-ethylenically unsaturated compound (2) and the photo-sensitizer (3).

4,210,714

PHOTOGRAPHIC MATERIAL WITH IMPROVED PROPERTIES

Heinrich Odenwälder, Cologne; Anita von König, Krefeld; Franz Moll; Walter Pätzold, both of Leverkusen; Lothar Rosenhahn, Cologne, and Friedhelm Sommer, Leverkusen, all in, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,811

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1977, 2711942

Int. Cl.[2] G03C *5/30, 7/00*

U.S. Cl. 430—372 **5 Claims**

1. A process of producing photographic images from photographic silver halide material containing at least one light-sensitive silver halide emulsion layer by imagewise exposure and photographic processing including developing exposed photographic material with a developer composition,

wherein the improvement is, the processing of the exposed photographic material carries out development of the exposed material in the presence of a stabilizing amount of 3-mercapto-5 (2-furyl)-1,2,4-triazole.

4,210,715

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL AND METHOD OF PROCESSING THEREOF

Mitsuto Fujiwhara; Syunji Matsuo; Toyoaki Masukawa; Yutaka Kaneko, and Mikio Kawasaki, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-muromachi, Japan

Continuation of Ser. No. 819,398, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 710,385, Aug. 2, 1976, abandoned. This application Mar. 2, 1979, Ser. No. 16,987

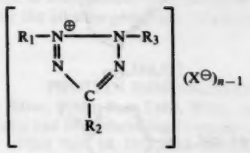
Claims priority, application Japan, Aug. 2, 1975, 50-94295; Jul. 31, 1976, 51-91919

Int. Cl.[2] G03C *5/30, 1/06*

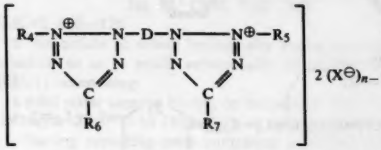
U.S. Cl. 430—439 **13 Claims**

1. A light-sensitive silver halide photographic material which material consists essentially of a support, at least one hydrophilic colloidal layer coated thereon which contains silver halide grains having an average grain size of from 0.05 to 1.4μ and at least 75% of which grains being within a range of 0.6 to 1.4 times the average grain size, a tetrazolium compound and a sensitizing dye; said tetrazolium compound being selected from the group consisting of a compound of formulae (I), (II) or (III):

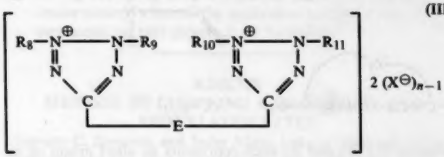
(I)



(II)

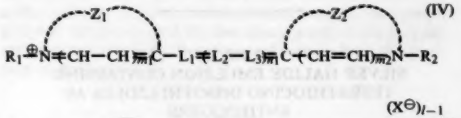


(III)

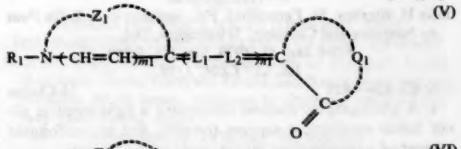


wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represents an aryl group or a heterocyclic group; R_2, R_6 and R_7 each represents an aryl group, a heterocyclic group, an alkyl group, hydroxyl, carboxyl or the salt thereof, an amino group, mercapto, nitro or hydrogen; D represents a divalent aromatic group; E represents an alkylene group, an arylene group or an aralkylene group; X is an anion; said heterocyclic group being selected from the group consisting of a thiadiazolyl, benzothiadiazolyl, oxazolyl, pyrimidinyl, pyridyl and 2,5-dimethylthiadiazolyl group; and n is 1 or 2, provided that the tetrazolium compound forms an intramolecular salt when n is 1; said sensitizing dye being present in said hydrophilic colloidal layer and being selected from the group consisting of a compound of a formula of formulae (IV) through (X);

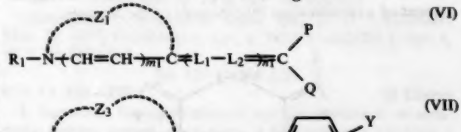
(IV)



(V)



(VI)



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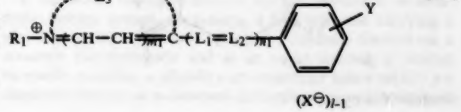

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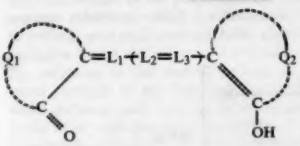
(VIII)



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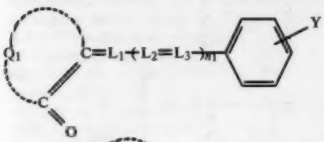
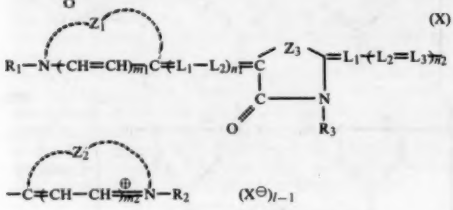


(X)



wherein R_1, R_2 and R_3 each represents an alkyl group or an aryl group; L_1, L_2 and L_3 each represents a methynyl group; Z_1, Z_2 and Z_3 each represents an atom or atomic group necessary for forming a 5 to 6-membered heterocyclic ring; P and Q each represents cyano, $-COOR_4$, $-COR_4$ or $-SO_2R_4$ in which R_4 represents an alkyl group; Q_1 and Q_2 each represents an atomic group necessary for forming a thiooxazolone ring, a pyrazolone ring, an oxyindole ring, a barbituric acid, a 2-thiobarbituric acid, a 2,4-oxazolidinedione ring, a 2,4-thiazolidinedione ring, a 2,4-imidazolidinedione ring, a 2-thio-2,4-oxazolidinedione ring, a 2-thio-2,4-thiazolidinedione ring, a 2-thio-2,4-selenazolidinedione ring, a 2-thio-2,5-thiazolidinedione ring, a 2-thio-hydantoinone ring, a 4-oxazolinone ring, a 4-thiazoline ring or a 4-imidazoline ring; Y represents hydrogen, amino, alkylamino, dialkylamino, halogen, an alkoxy group or an alkyl group; m_1 and m_2 each represents 0 or 1; n_1 and n_2 each represents 0 or 2; X represents an acid anion group; and l represents 1 or 2 provided that the sensitizing dye compound forms an intramolecular salt when l is 1.

4,210,716

SILVER HALIDE EMULSION CONTAINING TETRATHIOCINO DIISOTHIAZOLES AS ANTIFOGGERS

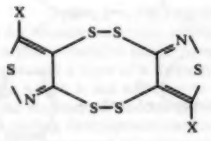
John H. Bigelow, St. Petersburg, Fla., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1979, Ser. No. 8,049

Int. Cl.[2] G03C *1/34*

U.S. Cl. 430—615 **14 Claims**

1. A photographic element comprising a light-sensitive silver halide emulsion, a support therefor, and an antifoggant amount of a tetrathiocino diisothiazole of the formula



wherein X is cyano or

Q is $-OR_1$ or $-NR_2R_3$; R_1 and R_3 are hydrogen or alkyl of 1–4 carbon atoms and R_2 is hydrogen or methyl.

4,210,717

HALF SOAP FORMATION FOR PHOTOTHERMOGRAPHIC EMULSIONS

Kenneth G. Gatzke, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 18, 1978, Ser. No. 970,264

Int. Cl.[2] G03C *1/02*

U.S. Cl. 430—620 **6 Claims**

1. In the process of forming a photothermographic emulsion by converting in solution, suspension, or dispersion 25 to 80% by weight of an organic acid, comprising an alkyl group of 8 to 28 carbon atoms with a terminal carboxylic acid group, to an alkali metal or ammonia salt of said acid and then converting in solution or suspension the salt to a silver salt of the organic acid, with silver halide being present during either the conversion of the acid to a salt or the conversion of the salt to a silver salt of the organic acid, the improvement which comprises maintaining the solutions, suspensions, or dispersions at a pH of more than 9 and a temperature of at least 70° C. when the acid is converted to an alkali metal or ammonia salt and when the alkali metal or ammonia salt is converted to a silver salt.

4,210,718

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,403

Int. Cl.[2] C12P *1/00*

U.S. Cl. 435—41 **6 Claims**

1. Process for the production of human TAF in vitro comprising growing the human melanoma cell line A-375 in agitated, liquid suspension of nutrient culture medium at about 35°–38° C. for a sufficient time to elaborate TAF and recovering the resulting TAF from the cells or cell product.

4,210,719

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,407

Int. Cl.[2] C12P *1/00*

U.S. Cl. 435—41 **6 Claims**

1. Process for the production of human TAF in vitro comprising growing the human rhabdomyosarcoma cell line RD in agitated, liquid suspension of nutrient culture medium at about 35°–38° C. for a sufficient time to elaborate TAF and recovering the resulting TAF from the cells or cell product.

4,210,720

PROCESS FOR FERMENTATIVELY PRODUCING VITAMIN B_{12}

Ichiro Kojima, Yokosuka; Hiroshi Sato, Kawasaki, and Yasuo Fujiwara, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,630

Claims priority, application Japan, May 26, 1977, 52-60414

Int. Cl.[2] C12D *5/06*

U.S. Cl. 435—42 **10 Claims**

1. A process for fermentatively producing vitamin B_{12},

which comprises cultivating a vitamin B_{12}-producing microorganism belonging to at least one of the genus Arthrobacter and the genus Propionibacterium, in the presence of a precultivation product of a vitamin B_{12}-producing microorganism belonging to at least the other genus, wherein the cultivation is carried out under one of the following conditions:

(i) precultivating a vitamin B_{12}-producing strain of the genus Arthrobacter and a vitamin B_{12}-producing strain of the genus Propionibacterium as a mixture or separately; then inoculating the mixed precultivation product in a culture medium; or inoculating the separate precultivation products in the culture medium either simultaneously or at different times; or inoculating the mixed precultivation product and either one of the separate precultivation products in the culture medium either simultaneously or at different times;

(ii) mix-cultivating a vitamin B_{12}-producing strain of the genus Arthrobacter and a vitamin B_{12}-producing strain of the genus Propionibacterium, and inoculating the resulting mixed precultivation product and cultivating it in a culture medium;

(iii) mixing a living precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter with a living precultivation product of a vitamin B_{12}-producing strain of the genus Propionibacterium, and cultivating the mixture with or without adding additional ingredients for the culture medium and/or a vitamin B_{12}-producing strain of at least one of the two above genera;

(iv) inoculating a vitamin B_{12}-producing strain of the genus Propionibacterium in a living precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter and cultivating it with or without adding additional ingredients for the culture medium;

(v) inoculating a vitamin B_{12}-producing strain of the genus Propionibacterium in a precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter which has been sterilized or from which the living microbial cells have been removed, and cultivating it with or without adding additional ingredients for the culture medium;

(vi) mixing a living precultivation product of a vitamin B_{12}-producing microorganism of the genus Propionibacterium with a precultivation product of a vitamin B_{12}-producing strain of the genus Arthrobacter which has been sterilized or from which living microbial cells have been removed, and cultivating the mixture with or without adding additional ingredients for the culture medium and/or a vitamin B_{12}-producing strain of the genus Propionibacterium; or

(vii) inoculating a vitamin B_{12}-producing strain of the genus Arthrobacter in a living precultivation product of a vitamin B_{12}-producing strain of the genus Propionibacterium, and cultivating it with or without adding additional ingredients for the culture medium;

to thereby produce a vitamin B_{12}-containing culture broth and then recovering vitamin B_{12} from said broth.

4,210,721
METHOD FOR DISSOLVING COLLAGEN-CONTAINING SKIN TISSUES

Rolf Monsheimer, Walter-Rathenau-Str. 46, Darmstadt-Eberstadt, and Ernst Pfleiderer, Grimmelshausenstr. 3, Darmstadt-Arheilgen, both of Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,423

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643012

Int. Cl.² C12P *21/06*

U.S. Cl. 435—69 **13 Claims**

1. A method for disposing of collagen-containing waste material of the leather industry which is unsuitable for directly working up further by decomposing said waste material to form a water-soluble hydrolyzate which is recoverable or disposable, which method consists essentially of hydrolyzing said waste material in an aqueous hydrolysis medium, the active components of which consist essentially of 0.01 to 0.08 mol per liter of urea and from 0.03 to 3 percent, by dry weight of the waste material being treated, of an alkaline proteinase having an activity optimum between pH 9 and 13, said hydrolysis medium at least initially having a pH in the pH region optimum for the alkaline proteinase employed.

4,210,722
PROTEIN IMMOBILIZER

Spencer F. Silver, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 14, 1977, Ser. No. 851,492

Int. Cl.² C07G *7/02, 7/00*

U.S. Cl. 435—176 **30 Claims**

1. An article to which biologically active proteins can be attached so as to retain substantially all of their biological activity comprising:

a solid polar support having on the surface thereof a monolayer about 10 to 250A thick of a water soluble polymer having repeating units containing a β-hydroxyalkyleneamine moiety wherein the equivalent weight of said polymer based on said moiety is 87 to 10,000.

4,210,723
METHOD OF COUPLING A PROTEIN TO AN EPOXYLATED LATEX

Linneaus C. Dorman, and Inder Mani, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 708,231, Jul. 23, 1976, abandoned. This application Nov. 25, 1977, Ser. No. 854,930

Int. Cl.² C07G *7/00, 7/02;* G01N *31/14*

U.S. Cl. 435—180 **12 Claims**

1. A method for coupling a protein having a reactive group containing a labile hydrogen to polymer particles containing free epoxy groups in a latex wherein the polymer particles in the latex range in size from about 0.15 to 1.5 micrometers in diameter and have an inner core and an outer shell containing free epoxy groups, said inner core being formed by the polymerization or copolymerization of one or more hard monomers and optionally soft monomer to produce a latex containing polymer particles that are said inner core and said outer shell being formed by copolymerization in the presence of said inner core polymer particles one or more hard monomers and a copolymerizable ethylenically unsaturated compound having free epoxy groups and optionally soft monomer, said method comprising reacting said polymer particles containing free epoxy groups in the latex and said protein at a pH of 7.0–9.0 for a time sufficient to form a covalent bond between the reactive group of the protein and the free epoxy group of the polymer particles and removing the unreacted protein from the latex-protein conjugate.

4,210,724
APPARATUS FOR LIQUID DISPOSAL AND DISTRIBUTION IN AUTOMATIC CULTURE SYSTEM

Shinroku Sogi; Makoto Yoshinaga, both of Hachioji; Toshio Shinohara, Chofu; Takayuki Aibara, and Ikuo Tawara, both of Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 20, 1978, Ser. No. 888,036

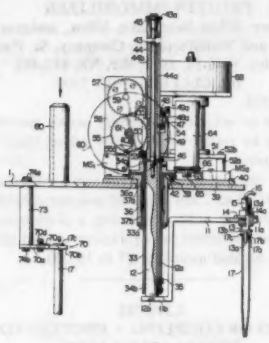
Claims priority, application Japan, Mar. 28, 1977, 52-33364; Mar. 29, 1977, 52-38106[U]; Apr. 2, 1977, 52-40253[U]; Apr. 4, 1977, 52-40893[U]

Int. Cl.² C12M *1/26*

U.S. Cl. 435—292 **14 Claims**

1. Apparatus for liquid disposal and distribution in an automatic culture system, comprising a first turntable carrying a plurality of culture vessels which are disposed thereon on a common circumference and at an equal spacing, a second turntable carrying a plurality of centrifuge tubes which are disposed thereon on a common circumference and at an equal

spacing, a pipette holding arm having its one end disposed to be angularly movable in a horizontal plane between part of the circumference on which the culture vessels are disposed and part of the circumference on which the centrifuge tubes are disposed, the other end of the arm being supported by and driven by a rotary and elevating mechanism, a tapered, pipette fitting cylinder secured to said one end of the pipette holding arm and having an opening formed therein for suction and



discharge, a fixed displacement pump connected through a tubing with the opening of the cylinder, and a pipette holder, a pipette remover and a liquid disposal pot disposed at corresponding positions on the path of angular movement of the cylinder which is secured to the arm, the pipette holding arm detachably carrying a pipette for distribution of liquid into the culture vessel and the centrifuge tube and for disposing unnecessary liquid from the culture vessel.

4,210,725

COMPOSITION FOR FORMING AN INTUMESCENT MATERIAL

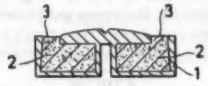
Cyril A. Redfarn, London, England, assignor to Dixon International Limited, Pampisford, England

Filed Feb. 2, 1978, Ser. No. 874,513

Claims priority, application United Kingdom, Feb. 4, 1977, 04653/77

Int. Cl.² C08J *9/00*

U.S. Cl. 521—100 **14 Claims**



1. A composition for forming an intumescent material which upon heating decomposes into gas and a solid foam residue, comprising:

a water-dispersible melamine formaldehyde prepolymer resin which when cured is hydrophobic;

an inorganic hydrophillic setting agent which chemically absorbs water and hardens quickly causing the composition to set;

a cross-linking agent present in an amount to cure the melamine formaldehyde prepolymer resin, the cross-linking agent being selected from the group consisting of dicyandiamide and guanidine;

an ammonium phosphate;

polyvinyl acetate;

a solid polyhydroxy compound; and

reinforcing fibrous material.

4,210,726

PROCESS FOR PRODUCING POLYURETHANE FOAM USING AS A FOAM STABILIZER AN ORGANOSILICONE OIL AND A HYDROCARBON OIL

Tadashi Hamamura, Yokohama; Isao Noda, Tokyo; Tadashi Yoshii, Yokohama; Masao Takase, Yokohama, and Terumi Watanabe, Yokohama, all of Japan, assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,637

Claims priority, application Japan, Aug. 12, 1977, 52-96157

Int. Cl.² C08G *18/14*

U.S. Cl. 521—110 **12 Claims**

1. In the process for producing high resilience polyurethane foam by foaming a mixture containing polyalkylene ether polyol having at least two hydroxyl groups per molecule on an average, more than 20% of said hydroxyl groups being primary hydroxyl groups, organic isocyanates, water and/or organic blowing agents, catalysts, and optionally additives, the improvement which comprises using as a foam stabilizer an organosilicone oil compound consisting of an organosilicone oil of average molecular weight 200–2000 composed of the blocks represented by the formula

$$R_aR'_bSiO_{\frac{4-(a+b)}{2}}$$

wherein a+b is 1 to 3, b is 0 or 1, R is a methyl group, and R' is a hydrocarbon group of 3–15 carbon atoms, said organosilicone oil containing at least one R' unit on an average in one molecule, and a hydrocarbon oil of average molecular weight 200–2000 containing more than 20 weight percent of alicyclic hydrocarbon and/or aromatic hydrocarbon.

4,210,727

GRAFT COPOLYMERS FROM UNSATURATED MONOMERS AND PEROXY DI-ESTER POLYOLS AND POLYURETHANES PREPARED THEREFROM

Frank J. Preston, Madison; Theodore C. Kraus, and Kiran B. Chandalia, both of Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 843,104, Oct. 18, 1977, Pat. No. 4,153,643. This application Feb. 15, 1979, Ser. No. 12,537

Int. Cl.² C08G *18/14*

U.S. Cl. 521—137 **21 Claims**

1. In a process for preparing a polyurethane foam from a reaction mixture comprising an organic polyisocyanate, a foaming agent, and a polyol reactant, the improvement characterized by including a polyol reactant which comprises a graft copolymer prepared by a process comprising polymerizing an unsaturated monomer in a polyol comprising a peroxy di-ester polyol of the formula:

$$((HO)_m-R_1-O+\underset{\underset{O}{\|}}{C}-R_2-\underset{\underset{O}{\|}}{C}-O-O-\underset{\underset{O}{\|}}{C}-R_3-\underset{\underset{O}{\|}}{C}+O-R_4-(OH)_r)$$

wherein m and r independently represent integers from 1–5, R_2 and R_3 independently represents radicals selected from aryl and alkenyl of 2–5 carbon atoms, and $((HO)_m-R_1-O+$ and $+O-R_4-(OH)_r)$ independently represent residues of polyols $R_1(OH)_{m+1}$ and $R_4(OH)_{r+1}$, wherein R_1 and R_4 independently represent polyether or polyester chains, having an average equivalent weight ranging from about 250 to 5000, after removal of one hydroxy hydrogen therefrom; said polymerizing occurring at a temperature at or above which the peroxy linkages of the peroxy di-ester polyol are ruptured.

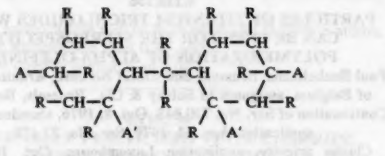
4,210,728

PREPARATION OF HIGH RESILIENCY POLYURETHANE FOAMS

John T. Patton, Jr., Wyandotte, and Robert L. McBrayer, Lincoln Park, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 3, 1978, Ser. No. 866,296
Int. Cl.[2] C08G *18/14, 18/32, 18/63*
U.S. Cl. 521—160 12 Claims

1. A polyurethane foam composition obtained by the reaction, in the presence of a blowing agent, of an organic polyisocyanate with a reactive polyol composition comprising (a) a polyol having an equivalent weight of from 500 to 5000 and a functionality of from 2 to 4 and (b) from 0.5 percent to 5.0 percent by weight based on the weight of the polyol of a reactive diamine of the formula:



wherein R is H or alkyl of 1 to 4 carbon atoms and A and A' are NH_2 or H with the provisos that in each ring either A or A' is NH_2, not both and when A or A' is NH_2 then the R attached to that carbon atom is H.

4,210,729

PREACTIVATED CATALYTIC COMPLEX SPOGOSPHERES

Jean-Pierre Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Aug. 27, 1973, Ser. No. 391,737
Claims priority, application Luxembourg, Aug. 25, 1972, 65954
Int. Cl.[3] C08F *4/66, 10/06*
U.S. Cl. 525—247 30 Claims

1. A storage stable catalytic complex for stereospecific α-olefin polymerization prepared by:

(a) reducing $TiCl_4$ with a reducing agent of the formula AlR_nX_{3-n} wherein R is a hydrocarbon radical with from 1 to 18 carbon atoms, X is a halogen, and n is a positive number which is at most 3;

(b) treating thus obtained reduced solid with a complexing agent which is an organic compound with at least one atom or group having at least one pair of free electrons capable of effecting coordination with titanium or aluminum, and is a compound of one of the formulae:

R'—O—R", R'—S—R", and R'—SH

wherein

R' is a hydrocarbon radical with from 1 to 15 carbon atoms, and

R" is a hydrocarbon radical with from 1 to 15 carbon atoms;

(c) reacting resulting treated solid with $TiCl_4$; (d) isolating thus formed catalytic complex;

(e) contacting thus formed catalytic complex with a stabilizing amount of a preactivator consisting of an organic compound of a metal of one of groups Ia, IIa, IIb and IIIa of the Periodic Table, less than 10 hours after isolation of the catalytic complex.

4,210,730

PLASTIFIERS, METHOD OF PREPARATION AND PVC COMPOSITIONS CONTAINING SAME

J. William Hirzy, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1977, Ser. No. 864,889
Int. Cl.[2] C08G *63/76*
U.S. Cl. 525—440 10 Claims

1. An ordered-random, solid, block copolyester having from about 15 to about 50 percent by weight amorphous end blocks and from about 85 to about 50 percent by weight center block having from about 20 to about 95 percent crystallinity based on heat of fusion, said copolymer having from about 25 to about 95 percent crystallinity based on heat of fusion, said center block having randomly alternating amorphous blocks and semi-crystalline blocks, and said end blocks and center block being acid halide-coupled.

4,210,731

AROMATIC POLYFORMAL-POLYCARBONATE BLOCK POLYMERS AND METHOD FOR MAKING SAME

Howard M. Relles, Rexford, and Donald S. Johnson, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 18, 1978, Ser. No. 942,950
Int. Cl.[2] C08L *69/00*
U.S. Cl. 525—469 9 Claims

1. A method for making aromatic polyformal-polycarbonate block polymer composed essentially of oligomeric aromatic polycarbonate which comprises,

(A) agitating a mixture containing as essential ingredients bisphenol of the formula,

HOROH,

methylene halide, from 1.5 to 2.2 moles of alkali metal hydroxide, per mole of bisphenol, and a member selected from the class consisting of a phase transfer catalyst and a dipolar aprotic solvent, where the phase transfer catalyst is utilized in a proportion of from about 0.01 to 2.0 moles, per mole of the bisphenol

(B) diluting the resulting mixture of (A) with at least 0.5 part by weight of an inert organic solvent, per part of (A)

(C) filtering the resulting solution of (B),

(D) while agitating the solution of (C), adding at least 0.5 part by weight of an antisolvent per part of the solution of (C) to effect the precipitation of oligomeric aromatic polyformal,

(E) combining the isolated oligomeric aromatic polyformal of (D) with a bisphenol of (A) and phosgenating the resulting mixture in the presence of a suitable inert organic solvent and

(F) recovering the polyformal-polycarbonate block polymer from the mixture of (E) where R is a divalent $C_{(6-30)}$ aromatic organic radical.

4,210,732

PHENOLIC RESINS WITH IMPROVED LOW TEMPERATURE PROCESSING STABILITY

Myron C. Annis, North Tonawanda, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 915,335, Jun. 13, 1978. This application Apr. 13, 1979, Ser. No. 30,037
Int. Cl.[2] C08L *61/12, 61/10*
U.S. Cl. 525—501 21 Claims

1. A phenolic novolak molding composition having improved low temperature processing stability comprising a phenol-aldehyde resin wherein from about 55% to about 90% of the available theoretical para-phenyl linkages in the resin chain are bridged to a phenyl group, and which comprises a blend of (1) a novolak resin condensation product of about one mole of a phenol and less than about one mole of aldehyde, and

(2) a novolak resin condensation product of about one mole of a bisphenol and less than about one mole of aldehyde.

4,210,733

COMPOSITE RESINOUS COMPOSITION

Hideo Hayashi, and Hisatake Sato, both of Yokohama, Japan, assignors to Nippon Oil Company, Ltd., Nishi-Shinbashi, Japan

Filed Apr. 6, 1978, Ser. No. 893,944
Claims priority, application Japan, Apr. 11, 1977, 52/41056
Int. Cl.[2] C08L *63/00*
U.S. Cl. 525—529 5 Claims

1. A composite resinous composition comprising:

(a) 5–90 weight parts of an aromatic resin resulting from the polymerization of 100 weight parts of cracked petroleum fractions which consists of unsaturated hydrocarbons and boiling in the range of 140°–280° C., the aromatic resin having a softening point of 50°–120° C. and a number average molecular weight of 500–1,500, and 7–40 weight parts of phenols in the presence of Friedel-Crafts catalysts; and

(b) 95–10 weight parts of an epoxy resin.

4,210,734

CONTROLLED ETHYLENE POLYMERIZATION PROCESS

Jean P. Machon, Bethune, France, assignor to Societe Chimique des Charbonnages-CdF Chimie, Paris-la-Defense, France

Filed Aug. 3, 1978, Ser. No. 930,668
Claims priority, application France, Aug. 9, 1977, 77 24540
Int. Cl.[2] C08F *4/02, 4/66, 10/02*
U.S. Cl. 526—65 7 Claims

1. A process for polymerising ethylene at a temperature of between 180° and 340° C. under a pressure of between 200 and 2,500 bars in a reaction system comprising at least two reaction zones, by means of a catalytic system comprising:

(a) an activator selected from hydrides and organometallic compounds of a metal of groups I to III of the Periodic Table,

(b) a compound represented by the formula

$$(TiCl_a)\ (MgCl_2)_y\ (AlCl_3)_z\ (RMgCl)_b$$

in which $2 \leqq a \leqq 3$, $y \leqq 2$, $0 \leqq z \leqq \frac{1}{2}$, $0 \leqq b \leqq 1$ and R is an aliphatic or aromatic hydrocarbon radical, and

(c) a compound represented by the formula

$$TiCl_3(AlCl_3)_w\ (E,\ TiCl_4)_x$$

in which $0 \leqq w \leqq \frac{1}{3}$, $0 \leqq x \leqq 0{,}03$ and E is a diisoamyl- or di-n-butylether,

wherein the compound (b) is not injected in the same reaction zone as the compound (c), wherein the residence time of each catalytic compound in its own reaction zone is between 1 and 150 seconds, and wherein the amounts of (a), (b) and (c) are such that the atomic ratio Al/Ti is between 1 and 10 in each reaction zone.

4,210,735

PROCESS FOR THE POLYMERIZATION OF α-OLEFINS

Jean-Pierre Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Oct. 12, 1972, Ser. No. 297,087
Claims priority, application Luxembourg, Nov. 24, 1971, 64328
Int. Cl.[3] C08F *4/66, 10.06*
U.S. Cl. 526—119 15 Claims

1. Process for the polymerisation of α-olefins, comprising polymerizing the α-olefin in the presence of an organometallic activator selected from the group consisting of compounds of a metal of one of Groups Ia, IIa, IIb, and IIIa of the Periodic Table and a solid catalytic element prepared by:

(a) reducing $TiCl_4$ by a reducing metal selected from the group consisting of the metals of Groups Ia, IIa, IIb, and IIIa of the Periodic Table, so as to prepare a double chloride of titanium and the reducing metal which corresponds to the general formula $n\text{-}TiCl_3.MCl_x$ in which:

n is any number such that $0 < n \leqq 3$;

M is the reducing metal; and

x is the valency of the reducing metal,

(b) treating the double chloride thus prepared of said general formula with a complexant which is capable of insuring coordination with the reducing metal and is of the general formula R'—O—R', wherein R' is an aliphatic radical containing 2 to 8 carbon atoms,

(c) reacting the double chloride thus treated with $TiCl_4$ to prepare a solid catalytic element, and

(d) separating the solid catalytic element thus prepared from its reaction medium.

4,210,736

PARTICLES OF TITANIUM TRICHLORIDES WHICH CAN BE USED FOR THE STEREOSPECIFIC POLYMERIZATION OF ALPHA-OLEFINES

Paul Baekelmans, Brussels, and Albert Bernard, Kraainem, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 730,845, Oct. 8, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,478
Claims priority, application Luxembourg, Oct. 15, 1975, 73593
Int. Cl.[2] B01J *31/38;* C08F *4/64;* C01G *23/02*
U.S. Cl. 526—142 44 Claims

1. Particles of titanium trichlorides which can be used for the stereospecific polymerization of alpha-olefines, which have been dried until their liquid content is less than 1% by weight relative to the weight of titanium trichloride present in the particles, the particles being of spherical shape and consisting of an agglomerate of micro-particles which are themselves spherical and which are porous.

4,210,737

SYNTHESIS OF SUBSTITUTED CYCLOPENTADIENES AND CYCLOPENTADIENE-FUNCTIONALIZED POLYMERS

Joseph P. Kennedy, 952 Genesee Rd., Akron, Ohio 44303, and Kenneth F. Castner, 2365 Cooledge Ave., Akron, Ohio 44305

Division of Ser. No. 770,436, Feb. 22, 1977, Pat. No. 4,138,441. This application Nov. 20, 1978, Ser. No. 962,048
Int. Cl.[2] C08F *4/52, 210/10*
U.S. Cl. 526—185 4 Claims

1. A method for preparing a polymer containing a cyclopentadiene terminal group which comprises reacting a material selected from the group consisting of isobutylene, styrene and α-methylstyrene with an initiator consisting of tertiary, allylic or benzylic halide of the formula RX, wherein R is selected from the group consisting of alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkaryl or aryl, and X represents chlorine, bromine or iodine, and $R_x'Al(CPD)_y$ wherein CPD represents the cyclopentadiene group, R' represents an alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkaryl or aryl group, y equals 1 to 2 and x equals 2 to 1 and the sum of x plus y is equal to 3.

4,210,738

CATALYTIC COMPLEXES

Jean P. Hermans, Strombeek-Bever, and Paul Henrioulle, Marilles, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Mar. 21, 1972, Ser. No. 236,407
Claims priority, application Luxembourg, Mar. 23, 1971, 62841; Aug. 17, 1971, 63732; Oct. 8, 1971, 64034
Int. Cl.[2] C08F *4/66, 10/00, 10/06*
U.S. Cl. 526—152 46 Claims

1. A solid titanium trichloride which is a catalytic complex for stereospecific α-olefin polymerization having a specific surface greater than 75 square meters per gram and a total

porosity higher than 0.15 cm^3/g, said titanium trichloride having the formula

$$TiCl_3.(AlR_{n'}X_{3-n'})_x.(C)_y$$

wherein

R is a hydrocarbon radical with from 1 to 18 carbon atoms;
X is a halogen;
n' is a number from 0 to 2, inclusive
C is a complexing agent which is an organic compound with at least one atom or group having at least one pair of free electrons capable of effecting coordination with titanium or aluminum, and is a compound of one of the formulae:

R'—O—R", R'—S—R" and R'—SH

wherein

R' is a hydrocarbon radical with from 1 to 15 carbon atoms, and
R" is a hydrocarbon radical with from 1 to 15 carbon atoms;
x is any number less than 0.30; and
y is any number higher than 0.001.

4,210,739

INTERNALLY PLASTICIZED VINYL CHLORIDE COPOLYMER COMPOSITION

Ruth E. Gallagher, Dobbs Ferry; Jagadish C. Goswami, New City; Paul Kraft, Spring Valley, all of N.Y., and Arthur J. Yu, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 795,990, May 11, 1977, abandoned, which is a continuation of Ser. No. 610,910, Sep. 5, 1975, abandoned. This application Jul. 21, 1978, Ser. No. 926,773

Int. Cl.[2] C08F *214/06, 220/18*

U.S. Cl. 526—325 **17 Claims**

1. An internally plasticized copolymer consisting of:
(1) from about 45% to about 80%, by weight, of vinyl chloride;
(2) from about 15% to about 54%, by weight, of a C_2–C_{10} alkyl acrylate; and
(3) from about 1% to about 15%, by weight, of a C_8–C_{22} dialkyl maleate or fumarate, or mixtures thereof.

4,210,740

COPOLYESTERS PREPARED FROM PHOSPHORUS COMPOUNDS WHICH CAN BE SHAPED AND WHICH HAVE REDUCED FLAMMABILITY

Paul Couchoud, Dardilly, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jan. 30, 1978, Ser. No. 873,601

Claims priority, application France, Feb. 3, 1977, 77 03688

Int. Cl.[2] C08G *63/68*

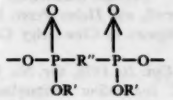
U.S. Cl. 528—167 **17 Claims**

1. A copolyester which may be shaped and which has reduced flammability, and comprising 85 to 99.5% of repeating units of the formula:

—CO—R—CO—O—R_1—O—

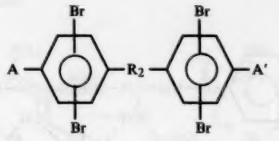
wherein the R radicals are derived from acid reactants, and in which 78.5 to 100% of the R radicals are selected from divalent aromatic paraphenylene and 2,6-naphthylene, 0 to 19.5 mol % relative to the sum of the radicals R are selected from the metaphenylene group and an aliphatic radical containing 6 to 12 carbon atoms, and 0 to 2 mol % relative to the sum of the radicals R are a trivalent or tetravalent radical derived from branching agents of acid character; 98 to 100% of the R_1 radicals are selected from the group consisting of divalent aliphtic, cycloaliphatic and cyclanic radicals and mixtures of two or more of these radicals, and 0 to 2% of the R_1 radicals are a trivalent or tetravalent radical derived from a branching agent of alcohol character; the sum of the trivalent or tetravalent radicals not exceeding 2 mol % relative to all the acid reactants;

at least 0.5% of units of the formula:

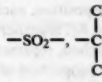


in which R' represents an alkyl radical containing 1 to 6 carbon atoms, and R" represents a divalent radical selected from an aliphatic group, one or more aromatic nuclei bonded in 1,4 position or fused, an aryl-aliphatic group containing one or more aromatic nuclei;

and 0 to 14.5% of units produced from a brominated compound of the formula:



in which R_2 is a direct bond or represents an



or —CH_2—or —O— group, and A and A' represent either —CO—OX groups, in which X=H or a lower alkyl group, or —X'—OH groups in which X'=a $+OCH_2—CH_2+_n$ group and n=1 to 10.

4,210,741

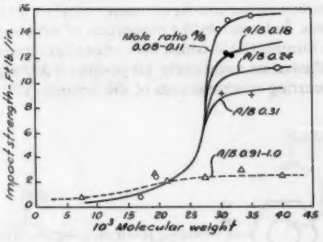
PHENOLPHTHALEIN-DIHYDROXY AROMATIC COMPOUND POLYCARBONATES

Joseph M. Baggett, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 606,149, Aug. 20, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,197

Int. Cl.[2] C08G *63/62*

U.S. Cl. 528—196 **7 Claims**



1. A thermoplastic polycarbonate resin consisting of a chain of divalent phenolphthalein radicals mixed with divalent dihydroxyaromatic radicals in the mole ratio range of phenolphthalein to dihydroxyaromatic compound from about 0.05 to about 0.7 wherein the phenolphthalein and dihydroxyaromatic radicals are linearly connected by carbonate ester groups, said resin having a weight average molecular weight range from about 25,000 to about 50,000 as determined by gel permeation chromatography.

4,210,742

TRANSPARENT POLYAMIDES FROM BRANCHED CHAIN DIAMINE

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 26, 1978, Ser. No. 954,810

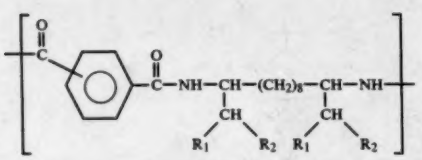
Claims priority, application Switzerland, Oct. 28, 1977, 13145/77

Int. Cl.² C08G 69/26

U.S. Cl. 528—346 9 Claims

1. A transparent polyamide having a reduced specific viscosity of 0.4 to about 3 dl/g, determined in a 0.5% solution of the polyamide in m-cresol at 25° C., and consisting either of

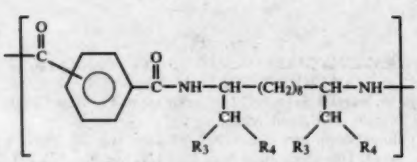
(a) recurring structural units of the formula (I)



(I)

wherein the carbonyl groups are bonded to the benzene ring in the 1,3- or 1,4-position, each of R_1 and R_2 represents methyl or R_1 and R_2, together with the carbon atom to which they are attached, represent cycloalkyl of 4 to 6 carbon atoms, and the proportion of structural units of the formula (I) in which the carbonyl groups are bonded in the 1,3-position to the benzene ring is 30 to 100%, or of

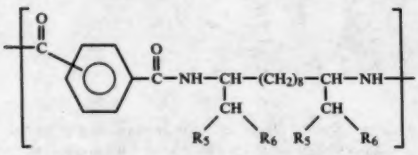
(b) recurring structural units of the formula (II)



(II)

wherein the carbonyl groups are bonded in the 1,3- or 1,4-position to the benzene ring, R_3 represents alkyl of 2 to 8 carbon atoms and R_4 represents alkyl or 1 to 4 carbon atoms, and wherein the proportion of structural units of the formula (II) in which the carbonyl groups are bonded to the benzene ring in the 1,3-position is 30 to 50%, or of

(c) recurring structural units of the formula (V)



(V)

wherein the carbonyl groups are bonded to the benzene ring either exclusively in the 1,3-position or exclusively in the 1,4-position or partly in the 1,3-position and partly in the 1,4-position, and in which R_5 and R_6, together with the carbon atom to which they are attached, represent cycloalkyl of 7 to 12 carbon atoms.

4,210,743

TRANSPARENT POLYAMIDES FROM BRANCHED CHAIN DIAMINES

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

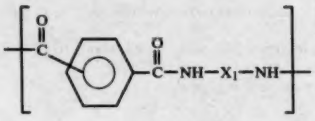
Filed Oct. 26, 1978, Ser. No. 954,809

Claims priority, application Switzerland, Oct. 28, 1977, 13149/70

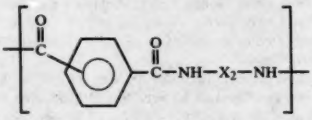
Int. Cl.² C08G 69/26

U.S. Cl. 528—347 10 Claims

1. A transparent polyamide having a reduced specific viscosity of 0.4 to about 3 dl/g, determined in a 0.5% solution of the polyamide in m-cresol at 25° C., and which consists of recurring structural units of the formula I

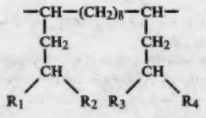


and of recurring structural units of the formula II

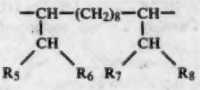


wherein

X_1 represents



X_2 represents



R_1 and R_3, each independently of the other, represent hydrogen or alkyl of 1 to 4 atoms,

R_2 and R_4, each independently of the other, represent alkyl of 1 to 12 carbon atoms,

R_5 and R_7, each independently of the other, represent alkyl of 1 to 4 carbon atoms,

R_6 and R_8, each independently of the other, represent alkyl of 1 to 10 carbon atoms, or

R_5 and R_6, and R_7 and R_8, each pair independently of the other pair, together with the carbon atom to which they are attached, represent cycloalkyl of 4 to 12 carbon atoms,

and in formula I and II the carbonyl groups are bonded to the benzene ring in the 1,4-position in an amount of 100 to 25 mol% and in the 1,3-position in an amount of 0 to 75 mol%, in each case based on all benzenedicarboxylic acid groups present, and the diamine components, based on all diamine components present, consist of 100 to 25 mol% of those of the formula —NH—X_1—NH— and of 0 to 75 mol% of those of the formula —NH—X_2—NH—, and the amount of diamine components —NH—X_1—NH—, expressed in mol%, is less than or equal to the amount of terephthalic acid components.

4,210,744

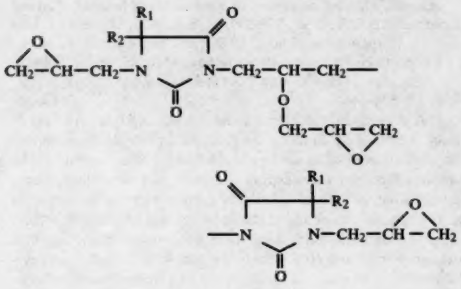
ADDUCTS CONTAINING EPOXIDE GROUPS, FROM HYDANTOIN TRISEPOXIDES AND BINUCLEAR HYDANTOINS

John H. Bateman, Bardonia, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,149
Int. Cl.[2] C08G *59/02, 59/26*
U.S. Cl. 528—363 **10 Claims**

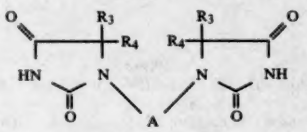
1. An advanced addition product containing 1,2-epoxide groups which is prepared by reacting a mixture of

(a) a hydantoin compound of the formula



wherein R_1 is hydrogen, alkyl containing 1 to 8 carbon atoms, or cycloalkyl containing 5 to 6 carbon atoms; and R_2 is alkyl containing 5 to 8 carbon atoms; with

(b) less than 1.0 equivalents of NH groups per epoxide group of (a) a binuclearbishydantoin compound of the formula



wherein R_3 and R_4 are selected from the group consisting of hydrogen or alkyl of 1 to 4 carbon atoms; or together R_3 and R_4 form tetramethylene or pentamethylene; and A is selected from the group consisting of alkylene, alkylidene or alkylidene substituted by one or more halogen atoms.

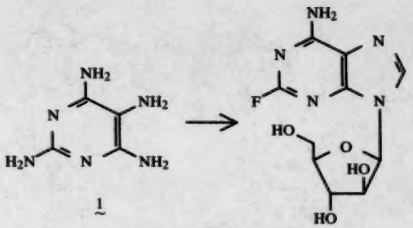
4,210,745

PROCEDURE FOR THE PREPARATION OF 9-β-D-ARABINOFURANOSYL-2-FLUOROADENINE

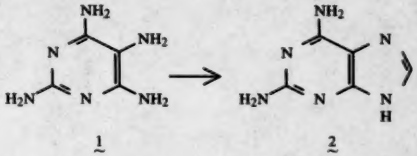
John A. Montgomery, Birmingham, Ala., assignor to The United States of America as represented by the Department of Health, Education & Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 885,340, Mar. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 866,907, Jan. 4, 1978. This application Nov. 20, 1978, Ser. No. 962,107
Int. Cl.[2] C07H *19/16, 17/00*
U.S. Cl. 536—26 **5 Claims**

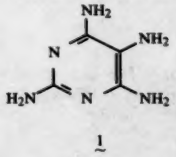
1. In an improved multi-step process of preparing 9-β-D-arabinofuranosyl-2-fluoroadenine by the reaction of



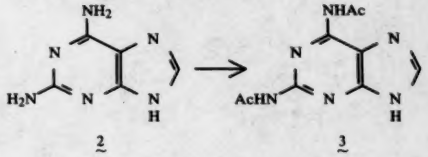
which includes



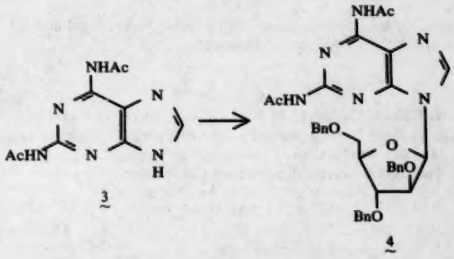
the improvement which utilizes



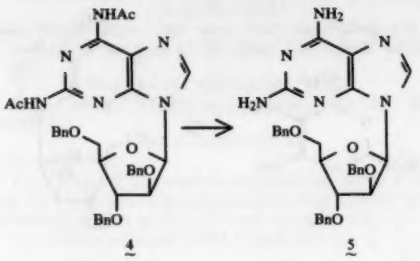
as a reactant and in the step



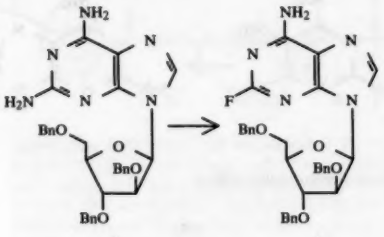
the improvement wherein the acetylation is carried out with acetic acid in pyridine and in the step



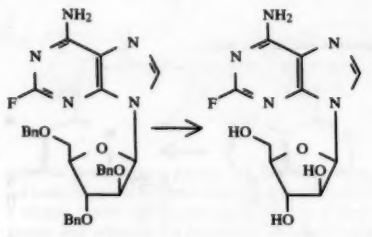
wherein a chlorosugar reactant is utilized in ethylene chloride in the presence of a molecular sieve and in the deacetylation step



where deacetylation is carried out with methanolic sodium methoxide and in the step



wherein the diazotization is carried out in a homogeneous mixture of tetrahydrofuran and fluorboric acid and in the step



9(2,3,5-tri-O-benzyl-β-D-arabinofuranosyl-2-fluoroadenine

9-β-D-arabinofuranosyl-2-fluoradenine

where the 2,3,5-tri-O-benzyl is converted to hydroxyl and the benzyl product groups are removed.

4,210,746

NUCLEOTIDE INHIBITOR OF PROTEIN SYNTHESIS

Ian M. Kerr, London; Ronald E. Brown, Hemel Hempstead, and Ara G. Hovanessian, London, all of England, assignors to National Research Development Corporation, England

Filed Aug. 10, 1978, Ser. No. 932,488

Int. Cl.² C07H *17/00, 15/12*

U.S. Cl. 536—27 **5 Claims**

1. A compound of the formula

$$(p)_m—(5'—A—2'—p)_n—(A)_x$$

wherein

p is orthophosphate,
m is 0, 2, or 3
A is adenosine,
n is from 2 to 5 and
x is 0 or 1,

said compound containing at least three adenosine residues, the figures 5' and 2' signifying the carbon atoms of the ribose ring to which the respective phosphate groups p are attached.

4,210,747

PROCESS FOR THE PREPARATION OF VISCOSE

Erkki Sorsa; Esko Haukkovaara, and Jan Fors, all of Valkeakoski, Finland, assignors to Kemira Oy, Helsinki, Finland

Continuation of Ser. No. 773,399, Mar. 2, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 930,917

Claims priority, application Finland, Mar. 10, 1976, 760623

Int. Cl.² C08B *9/00*; D21C *9/00*

U.S. Cl. 536—60 **2 Claims**

1. A process for the preparation of viscose from paper grade pulp, prepared by alkali cooking without prehydrolysis, which consists of adding to said pulp, steeping lye in excess of the amount required for steeping the pulp and an organic compound which is a member selected from the group consisting of a phosphatidylcholine, diethylene glycol monobutylether, methyl isobutylketone, a mixture of primary amyl alcohol isomers containing 60% pentanol-1 and 40% 2- and 3 -methylbutanol-1, a mixture of secondary amyl alcohol isomers containing about 60% 2-pentanol and about 36% 3-pentanol, and piperidine, steeping said pulp to form alkali cellulose, removing excess alkali, recovering alkali cellulose, aging said alkali cellulose, xanthating said aged alkali cellulose with carbon disulfide in an amount of 20–35% of the quantity of alpha cellulose presentin the recovered alkali cellulose to obtain cellulose xanthate and dissolving said cellulose xanthate to obtain viscose.

4,210,748

ENLARGED-HETERO-RING PROSTA-CYCLIN ANALOGS

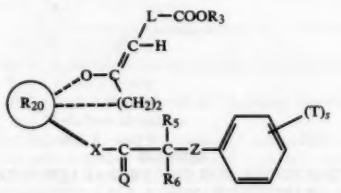
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,899

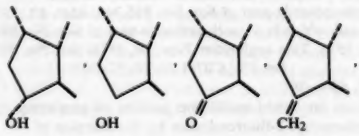
Int. Cl.² C07D *311/02*

U.S. Cl. 542—426 **97 Claims**

1. A 4Z compound of the formula



wherein (R_{20}) is



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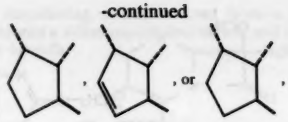


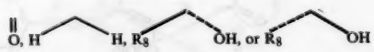
wherein

L is $-(CH_2)_d-C(R_2)_2-$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,

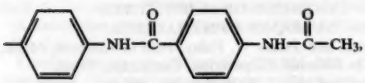
wherein

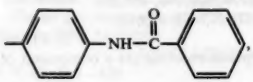
Q is

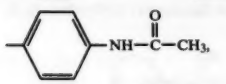


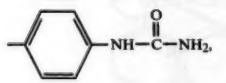
wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

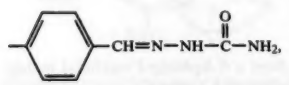
wherein R_3 is (a) hydrogen (b) alkyl of one to 12 carbon atoms, inclusive, or (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

(g) 

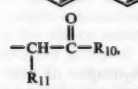
(h) 

(i) 

(j) 

(k) 

(l)

(m) 

wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wheren R_{11} is hydrogen or benzoyl, or (n) a pharmacologically acceptable cation;

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—), a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the phenyl ring;

wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $—OR_7$— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; and

wherein X is

(1) trans—CH=CH—

(2) cis—CH=CH—

(3) —C≡C— or

(4) $—CH_2CH_2—$;

including the lower alkanoates thereof.

4,210,749

SUBSTITUTED 1,2,4,5-TETRAHYDRO-3H,3 BENZAZEPINES

Bola V. Shetty, Rockville, Md., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 747,151, Dec. 3, 1976, which is a continuation of Ser. No. 523,092, Nov. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 241,091, Apr. 4, 1972, abandoned, which is a continuation of Ser. No. 711,897, Mar. 11, 1968, abandoned. This application May 21, 1979, Ser. No. 41,574

Int. Cl.[2] **A61K** *31/55;* **C07D** *233/00, 403/06, 413/06*

U.S. Cl. 542—469 **2 Claims**

1. A compound selected from the group consisting of 7-methoxy-3-(3-phenylallyl)-1,2,4,5-tetrahydro-3H,3-benzazepine and 7-hydroxy-3-(3-phenylallyl)-1,2,4,5-tetrahydro-3H,3-benzazepine.

4,210,750

PROCESS FOR THE PREPARATION OF 3-CARBAMOYL CEPHALOSPORINS USING ISOCYANATES

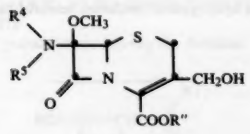
Stephen Marburg, Plainfield, and Janos Kollonitsch, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 647,961, Jan. 9, 1976, abandoned, which is a continuation of Ser. No. 487,851, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 275,614, Jul. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,949, Aug. 25, 1971, abandoned. This application Nov. 17, 1976, Ser. No. 742,486

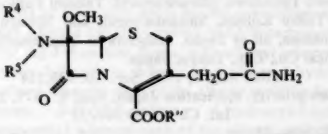
Int. Cl.[2] **C07D** *501/26, 501/28, 501/32, 501/34*

U.S. Cl. 544—21 **2 Claims**

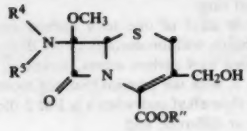
1. A process wherein a compound having the formula



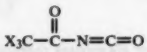
is converted to a compound of the formula



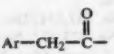
which comprises the sequence of reacting a compound of the formula:



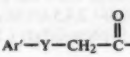
with an N-substituted isocyanate of the formula:



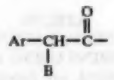
in which X is fluoro, to produce the corresponding 3-(N-substituted) carbamoyloxymethyl derivative, and cleaving the N-substituent in the presence of an aqueous buffer solution having a pH of from about 4 to about 6 to produce the desired 3-carbamoyloxymethyl cephalosporin derivative, in which, in the foregoing formulae, R_4 is hydrogen and R_5 is cyanoacetyl;



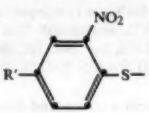
in which Ar is phenyl, thienyl, furyl, or phenyl substituted with substituents selected from the group consisting of halo, hydroxy, methoxy, and nitro;



in which Ar' is phenyl, or pyridyl, and Y is sulfur;



in which Ar is as defined above, and B is hydroxyl or carboxyl;



in which R' is hydrogen or methoxy; tetrazolylacetyl; and R'' is hydrogen.

4,210,751

PROCESS FOR PRODUCING 7β-AMINO-7α-METHOXYCEPHALOSPORINS

Kazuharu Tamazawa, Shiraokamachi; Takashi Fujikura, Hachioji; Tadao Kojima, Shiraokamachi, and Masaru Iwanami, Yokohama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

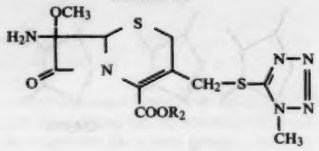
Filed Aug. 2, 1978, Ser. No. 930,214

Claims priority, application Japan, Aug. 8, 1977, 52/94756

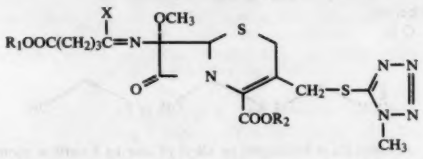
Int. Cl.[2] C07D *501/18*

U.S. Cl. 544—21 **7 Claims**

1. A process for producing a 7β-amino-7α-methoxycephalosporanic acid compound of the formula



wherein R_2 represents a hydrogen or a protective group for the carboxyl group which comprises reacting an iminohalide compound or an iminoether compound of the formula



wherein R_1 and R_2 each represents a hydrogen atom or a protective group for the carboxyl group and X represents a halogen atom or a lower alkoxy group and absolute methanol at −70° C. to −20° C.

4,210,752

SYNTHESIS OF SUBSTITUTED SULFAM(NA)PHTHALEINS

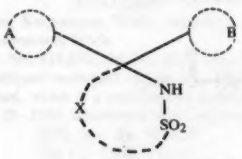
Louis Cincotta, and James W. Foley, both of Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 2, 1978, Ser. No. 957,162

Int. Cl.[2] C07D *279/02, 275/06*

U.S. Cl. 544—33 **22 Claims**

1. A method which comprises reacting (a) a compound of the formula

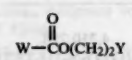


wherein A is selected from a 4'-hydroxy-1'-naphthyl moiety substituted in the 3'-position with a group,

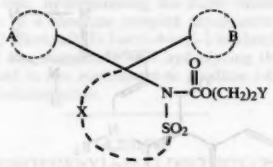
wherein R^I is perhalomethyl and R^{II} is hydrogen or perhalomethyl and a 4'-hydroxy-1'-phenyl moiety substituted in the 3'-position with a group,

wherein R^I is perhalomethyl and R^{II} is hydrogen or perhalomethyl; B is a phenyl moiety or a naphthyl moiety provided B is a phenyl moiety when said A is said 4'-hydroxy-1'-naphthyl moiety and X represents the atoms necessary to

complete a ring-closing moiety selected from a sulfamphthalein moiety and a sulfamnaphthalein moiety and (b) an acid halide of the formula



wherein W is chloro or bromo and Y is hydrogen or an electron-withdrawing group in pyridine at a temperature between about 0° C. and 100° C. in the presence of 2 to 20 grams per gram of compound (a) of acidic alumina or zeolite molecular sieve to yield (c) the corresponding N-acylated compound of the formula



wherein A, B, X and Y have the same meaning given above.

4,210,753

CARBOSTYRIL COMPOUNDS

Michiaki Tominaga; Hitoshi Tone, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

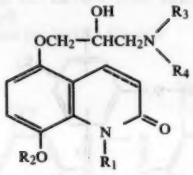
Continuation-in-part of Ser. No. 778,537, Mar. 17, 1977, abandoned. This application Nov. 30, 1978, Ser. No. 965,470

Claims priority, application Japan, Mar. 17, 1976, 51/28957; May 7, 1976, 51/52498

Int. Cl.[2] C07D *413/12*

U.S. Cl. 544—128 **8 Claims**

1. A carbostyril compound represented by the formula (I):



(I)

wherein R_1 represents a hydrogen atom, R_2 represents a hydrogen atom, a phenylalkyl group selected from the group consisting of monophenylalkyl and diphenylalkyl groups having a straight or branched chain alkyl group having 1 to 6 carbon atoms in the alkyl moiety, an alkoxyalkyl group having a straight or branched chain alkoxy group of 1 to 6 carbon atoms in the alkoxy moiety thereof and a straight or branched chain alkylene group of 1 to 6 carbon atoms in the alkyl moiety thereof, a mono hydroxyalkyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms, an alkylcarbonyl group having a straight or branched chain alkyl group of 1 to 6 carbon atoms in the alkyl moiety thereof, or a straight or branched chain alkynyl group having 2 to 7 carbon atoms, R_3 represents a hydrogen atom, and R_4 represents a pyrrolidinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, a piperazinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, or a morpholinoalkyl group having a straight or branched alkylene group of 1 to 6 carbon atoms, or R_3 and R_4 can form, when taken together with the nitrogen atom to which they are attached, a piperidino group, a morpholino group, a pyrrolidino group or a piperazino group, said phenylalkyl, pyrrolidinoalkyl, piperazinoalkyl, morpholinoalkyl, piperidino, morpholino, pyrrolidino or piperazino group optionally containing 1 to 3 substituents selected from the class contsisting of an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a halogen atom, an alkylenedioxy group of 1 to 2 carbon atoms, a carbamoyl group and a phenyl group, the 3,4-bond of the carbostyril nucleus represents a single bond, and the pharmaceutically acceptable acid additional salts thereof.

4,210,754

MORPHOLINO CONTAINING BENZAMIDES

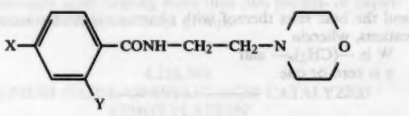
Willy Burkard, Reinach, and Pierre-Charles Wyss, Muttenz, both of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 764,621, Feb. 1, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,721

Int. Cl.[2] C07D *295/06, 295/14*

U.S. Cl. 544—167 **7 Claims**

1. A compound of the formula



wherein X is halogen

and Y is hydrogen or nitro,

an N-oxide thereof or pharmaceutically acceptable acid addition salt thereof.

4,210,755

AMINATED γ-DIALDEHYDE; METHODS FOR PREPARING THE SAME AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Guy Vanlerberghe, Montjay-la-Tour par Claye-Souilly, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 750,518, Dec. 14, 1976, Pat. No. 4,118,423, which is a division of Ser. No. 463,808, Apr. 24, 1974, Pat. No. 4,014,990, which is a division of Ser. No. 210,217, Dec. 20, 1971, Pat. No. 3,812,246. This application Jul. 10, 1978, Ser. No. 923,311

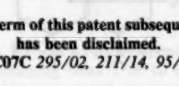
Claims priority, application Luxembourg, Dec. 24, 1970, 62317

The portion of the term of this patent subsequent to Oct. 3, 1995, has been disclaimed.

Int. Cl.[2] C07C *295/02, 211/14, 95/02, 95/06*

U.S. Cl. 544—175 **6 Claims**

1. Aminated γ-dialdehyde having the formula



wherein R_1 and R_2 each independently are selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, hydroxy-alkyl wherein the alkyl moiety has 1–6 carbon atoms, cycloalkyl having 3–6 carbon atoms, aryl, alkaryl wherein the alkyl moiety has 1–6 carbon atoms, (2,5-dialkoxy 4-hydroxy)-3-tetrahydrofuryl wherein each of the alkoxy moieties has 1–4 carbon atoms, β-N-[(2,5-dialkoxy 4-hydroxy)-3-tetrahydrofuryl]-aminoethyl wherein each of the alkoxy moieties has 1–4 carbon atoms, and together with the nitrogen atoms to which they are attached form a heterocycle selected from the group consisting of piperidinyl and morpholinyl.

4,210,756
TETRAHYDROQUINOLINE HYDANTOINS FOR CHRONIC DIABETIC COMPLICATIONS

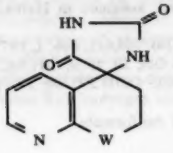
Reinhard Sarges, Mystic, Conn., assignor to Pfizer, Inc., New York, N.Y.

Division of Ser. No. 849,546, Nov. 8, 1977, Pat. No. 4,147,795, which is a division of Ser. No. 767,803, Feb. 11, 1977, Pat. No. 4,117,230, which is a continuation-in-part of Ser. No. 733,062, Oct. 18, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,256

Int. Cl.[2] C07D *487/10*

U.S. Cl. 546—15 **4 Claims**

1. The compound of the formula:



and the base salts thereof with pharmacologically acceptible cations, wherein

W is $-(CH_2)_n-$ and

n is zero or one.

4,210,757
NOVEL NAPHTHOYLENE-PERINONES DISPERSE DYESTUFFS

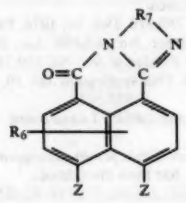
Siegfried Dengler, Choëx; Peter Loew, Münchenstein; Christian Zickendraht, Binningen, and Hansrudolf Schwander, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 669,011, Mar. 22, 1976, Pat. No. 4,067,889, which is a division of Ser. No. 480,085, Jun. 14, 1974, Pat. No. 3,970,675. This application Oct. 28, 1977, Ser. No. 846,287

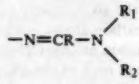
Int. Cl.[2] C07D *471/06*

U.S. Cl. 546—52 **3 Claims**

1. A dyestuff or a isomeric dyestuff mixture of the formula



wherein R_6 represents lower alkyl, lower alkoxy, hydroxy, chlorine or bromine or hydrogen, R_7 represents naphthyl or phenyl or phenyl substituted by lower alkyl, lower alkoxy, phenyl, di (lower alkyl)-amino, nitro, cyano, bromine, chlorine, SO_3H, SO_2 phenyl, $SO_2N(C_4H_9)_2$, $COOC_2H_5$ or $CON(CH_3)_2$, [SO_2N (alkyl C_1-C_4)$_2$, COO lower alkyl or CON (alkyl C_1-C_4,] which is bonded in 1,2-position, and one Z represents hydrogen and the other Z represents a radical of the formula



in which R is hydrogen or lower alkyl, R_1 is hydrogen, alkyl C_1-C_6, benzyl or R_1 and R_2 together with the adjacent nitrogen form tetrahydroquinoline, tetrahydroquinoline substituted by lower alkyl or indoline substittued by lower alkyl, and R_2 is alkyl C_1-C_4, benzyl or phenyl, said isomeric mixture being a mixture of positional isomers resulting from substituents Z, R_6 and R_7 phenyl substituted with said substituents.

4,210,758
1,5-DIHYDRO-1,5-DIOXO-N-1H-TETRAZOL-5-YL-4H-[1]BENZOPYRANO[3,4-B]PYRIDINE-2-CARBOXAMIDES

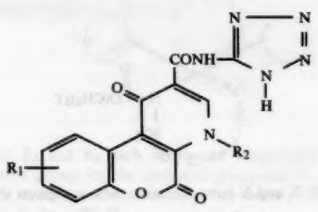
David T. Connor, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 21, 1979, Ser. No. 22,391

Int. Cl.[2] C07D *491/04*

U.S. Cl. 546—92 **7 Claims**

1. A compound of the formula:



I

wherein R_1 is hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl, or nitro and R_2 is hydrogen or lower alkyl and the pharmaceutically acceptable salts thereof.

4,210,759
BENZENE SULFONAMIDO PYRIDINE DERIVATIVES

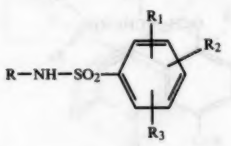
Michael J. Virnig, Fridley, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 24, 1978, Ser. No. 909,225

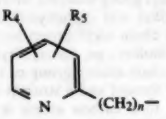
Int. Cl.[2] C07D *213/42*

U.S. Cl. 546—312 **19 Claims**

1. Compounds of the structure:



wherein R is a pyridine group of the structure:



wherein R_4 and R_5, which may be the same or different, are selected from the group consisting of hydrogen, linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, halogen, nitrile, alkoxy containing from 1 to 20 carbon atoms, and trifluoromethyl and n is an integer equal to 0 or 1, said pyridine group being bonded to the sulfonamido group through a carbon adjacent to the hetero atom of the ring and R_1, R_2 and R_3, which may be the same or different, are selected from the group consisting of hydrogen, and linear and branched chain alkyl and alkenyl containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible liquid hydrocarbon solvents.

4,210,760
PROCESSES FOR DEHYDROGENATION OF ARYLIMIDAZOLIDONES

Sivaraman Raghu, Norwalk, and Arthur K. Hoffmann, New Canaan, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,218
Int. Cl.[2] C07D *233/70*
U.S. Cl. 548—320 11 Claims

1. A process for the production of enantiomerically enhanced imidazolidones which comprises the steps of: reacting 1-(2-alkoxyalkyl)-4-aryl-2-imidazolidone in the presence of a noble metal catalyst to dehydrogenate the imidazolidone and provide the corresponding 1-(2-alkoxyalkyl)-4-aryl-2-imidazolinone, reacting the latter with a lower aliphatic carboxylic acid anhydride to produce 1-(2-alkoxyalkyl)-3-acyl-4-imidazolin-2-one, hydrogenating the latter imidazolinone in the presence of a rhodium complex asymmetric catalyst to produce 1-(2-alkoxyalkyl)-3-acyl-4-aryl-2-imidazolidone with an excess of one enantiomer, and hydrolyzing the imidazolidone enhanced in one enantiomer to produce 1-(2-alkoxyalkyl)-4-aryl-2-imidazolidone.

4,210,761
1-(4-CHLOROPHENYL)-3-(2,2-DIETHOXYETHYL)-2-IMIDAZOLIDINONE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,514
Int. Cl.[2] C07D *233/34*
U.S. Cl. 548—320 1 Claim

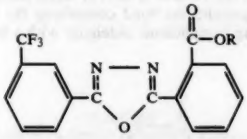
1. The compound 1-(4-chlorophenyl)-3-(2,2-diethoxyethyl)-2-imidazolidinone.

4,210,762
2[5-(3-TRIFLUOROMETHYLPHENYL)-1,3,4-OXADIAZOL-2-YL] BENZOATES

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 17, 1978, Ser. No. 934,440
Int. Cl.[2] C07D *271/10*; A01N *9/22*
U.S. Cl. 548—145 4 Claims

1. A compound having the formula



wherein R is H, lower alkyl or agriculturally acceptable cations

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4,210,763
WATER-SOLUBLE ACID ADDITION OR QUATERNARY AMMONIUM SALTS USEFUL IN ELIMINATING OR PREVENTING THE BRIGHTENING EFFECTS OF ANIONIC OPTICAL BRIGHTENERS

Giuseppe Raspanti, Fiorano al Serio, Italy, assignor to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 758,134, Jan. 10, 1977, Pat. No. 4,098,954, which is a continuation of Ser. No. 516,579, Oct. 21, 1974, abandoned. This application Apr. 26, 1978, Ser. No. 900,175
Int. Cl.[3] C07D *403/14*
U.S. Cl. 548—350 13 Claims

1. A water-soluble acid addition salt or quaternary ammonium salt of a compound produced by the acylation of an excess of diethylene triamine with isophthalic or terephthalic acid or a functional derivative thereof in a molar ratio of diethylene triamine:acylating agent exceeding 1.5:1, respectively, subsequently cyclizing the product to afford imidazoline groups, said acylation and cyclization being conducted at a temperature of from about 150° C. to about 250° C. for a time sufficient to allow the reaction to substantially reach completion, and reacting the product further by acylation at a temperature of from about 150° C. to about 180° C. in a molar ratio of initial to present acylating agent of 1:0.3 to 1:1.0, respectively, with a bifunctional acylating agent which is a saturated aliphatic dicarboxylic acid of formula,

$$HOOC(CH_2)_qCOOH$$

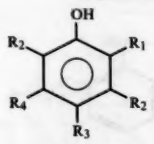
in which q is an integer 1 to 6, or a functional derivative thereof, or a functional derivative of carbonic acid, any free base of the compound resulting from acylation with said bifunctional acylating agent is reacted with sufficient acid to produce an acid addition salt thereof and any quaternary ammonium salt of the compound resulting from acylation with said bifunctional acylating agent is produced by reacting said compound with an alkylating agent to yield a methyl, ethyl or phenyl- or naphthyl-substituted methyl or ethyl group, with the proviso that the quaternary ammonium salt does not contain a nitrogen atom bearing more than two phenyl- or naphthyl-substituted methyl or ethyl groups.

4,210,764
BARIUM OXIDE/CRESYLIC ACID CATALYZED ETHOXYLATION

Kang Yang; Gerald L. Nield, and Paul H. Washecheck, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed May 4, 1979, Ser. No. 36,273
Int. Cl.[2] C07C *41/02*, *41/10*
U.S. Cl. 568—618 10 Claims

1. A method for the ethoxylation of alkanols containing from about 4 to about 24 carbon atoms comprising contacting said alkanols with ethylene oxide in the presence of a catalyst system comprising at least one material selected from the group consisting of barium oxide, barium hydroxide and hydrated barium hydroxide, together with an effective amount of phenol or a substituted phenol of the general formula



wherein R_1, R_2, R_3, R_4, and R_5 are independently hydrogen or an alkyl group containing from 1 to 10 carbon atoms, and wherein the ethoxylation is carried out at temperatures of from about 120° to about 250° C.

4,210,765
PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 28, 1978, Ser. No. 882,242
Int. Cl.[2] C07C *39/16*, *37/00*
U.S. Cl. 568—726 8 Claims

1. A process for obtaining halogenated diphenols comprising:

dissolving or suspending a diphenol of the bisphenol type in methylene chloride; and,

introducing sulfuryl chloride into said diphenol and methylene chloride in an amount sufficient to provide about 0.1–2 moles chlorine per mole of diphenol, said sulfuryl chloride generating sulfur dioxide which purges the reac-

tion of halogen halide coproduct such that there is obtained therefrom either a substantially pure dihalodiphenol or a statistical ternary mixture consisting essentially of unreacted diphenol, monohalodiphenol and dihalodiphenol.

4,210,766

PROCESS FOR PRODUCING 2-HALO-4-BROMOPHENOLS

Tibor Somlo, Birsfelden, and Anton Hungerbühler, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

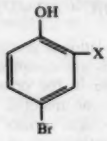
Filed Aug. 22, 1978, Ser. No. 935,837

Claims priority, application Switzerland, Aug. 26, 1977, 10453/77

Int. Cl.² C07C *39/27, 39/28*

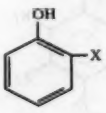
U.S. Cl. 568—779 **9 Claims**

1. A process for producing 2-halo-4-bromophenols of the formula I



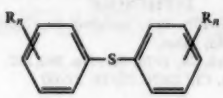
(I)

in which X represents chlorine or bromine, by bromination of 2-halophenols of the formula II



(II),

in which X has the meaning given under the formula I, which process comprises brominating, at a temperature of from about 0°–60° C., a halophenol of the formula II in the presence of from about 0.1–5.0%, by weight of said 2-halophenol, of a mixed catalyst consisting of approximately equimolar amounts of a halide of zinc, iron, aluminum or cobalt, and a diphenyl sulfide of the formula III



(III)

in which

R represents methyl or halogen, and

n represents 0 to 3;

said bromination utilizing a bromination agent selected from the group consisting of elementary bromine, mixtures of chlorine and bromine, bromine chloride, N-bromine compounds and hypobromites.

4,210,767

2,2,3-TRIMETHYL-3-CYCLOPENTEN-1-YLALKENYL AND ALKYLIDENE SECONDARY ALKANOLS, ALKANONES, CYCLOALKANOLS AND CYCLOALKANONES, ORGANOLEPTIC USES THEREOF IN PERFUME COMPOSITIONS, COLOGNES AND PERFUMED ARTICLES AND PROCESS FOR PRODUCING SAME

Takao Yoshida, West Long Branch; Braja D. Mookherjee, Holmdel; Venkatesh Kamath, Red Bank; John B. Hall, Rumson; William I. Taylor, Summit, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 932,677, Aug. 10, 1978, Pat. No. 4,169,109.

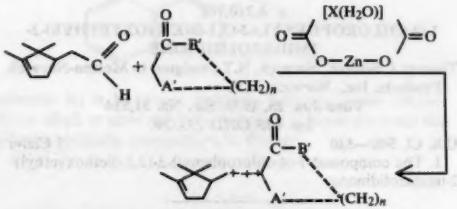
This application Mar. 23, 1979, Ser. No. 23,442

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.² C07C *45/00, 29/00*

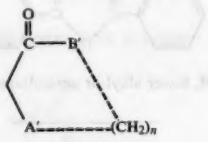
U.S. Cl. 568—345 **8 Claims**

1. A process for preparing 2,2,3-trimethyl-3-cyclopenten-1-ylalkenyl and alkylidene alkanones and cycloalkanones according to the reaction scheme:



wherein x is 0 or 2;

wherein one of the lines +++++++ is a carbon-carbon double bond and the other of the lines +++++++ is a carbon-carbon single bond; wherein A′ is one of hydrogen, C_3, C_2H_5 or —CH_2— and B′ is hydrogen, CH_3, C_2H_5 or —CH_2—; n is 0, 1 or 2; each of the dashed lines represents a carbon-carbon single or no bond; with the proviso that A′ and B′ is both —CH_2— when n=1 or n=2 and the dashed line represents a carbon-carbon single bond; and A′ is hydrogen and B′ is C_2H_5 or CH_3 or A′ is CH_3 and B′ is CH_3 or C_2H_5 and n is 0 and the dashed line represents no bond comprising the steps of intimately admixing campholenic aldehyde with a ketone having the structure:



in the presence of a catalyst selected from the group consisting of zinc acetate and zinc acetate dihydrate; said reaction being carried out in the liquid phase at an elevated temperature sufficient to produce the desired product.

4,210,768

NICKEL SILICATE HYDROGENATION PROCESS

Harold E. Swift, Gibsonia, Pa., assignor to Gulf Research and Development Company, Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,245

Int. Cl.² C07C *5/02, 5/14*

U.S. Cl. 585—250 **10 Claims**

1. A process for hydrogenating hydrocarbons selected from the group consisting of aromatic compounds having from six to 14 ring carbon atoms, olefinic and diolefinic compounds

having from two to 60 carbon atoms and acetylic compounds having from two to 10 carbon atoms which comprises reacting said hydrocarbon with hydrogen at a temperature of about 5° to about 500° C. and a pressure of about 50 to about 5,000 pounds per square inch gauge in contact with a layered complex nickel silicate catalyst characterized as having repeating units of the structural formula

$$[(1-x)Ni^{+2}+xMg^{+2}]_3(OH)_4Si_2O_5.wH_2O,$$

wherein x is a number from 0 to 0.6 and w is a number ranging from 0 to 4, said catalyst having the following X-ray powder diffraction pattern:

d(A.)	I
7.50	s.
4.50	m.
3.67	s.
2.58	m.
2.46	m.
2.10	w.
1.725	w.
1.545	m.
1.320	w.
1.300	w.

said catalyst having been treated, prior to said reaction, by reduction in a hydrogen atmosphere at a temperature of about 200° to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of about one to about 24 hours, oxidation in an atmosphere containing molecular oxygen at a temperature of about 100° to about 600° C. for a period of about two to about 24 hours using a gas containing from about two to about 90 volume percent molecular oxygen and then again reduction in a hydrogen atmosphere at a temperature of about 200° to about 600° C. and a pressure of about 15 to about 1,000 pounds per square inch gauge for a period of about one to about 24 hours.

4,210,769

HYDROCARBON DEHYDROGENATION WITH A SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 907,240, May 18, 1978, Pat. No. 4,157,989, which is a division of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Apr. 30, 1979, Ser. No. 34,810

The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.

Int. Cl.[2] C07C *5/40*

U.S. Cl. 585—379 **17 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrogenation conditions, with a catalytic composite consisting essentially of a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of a catalytically effective amount of a platinum group component maintained in the elemental metallic state.

4,210,770

PROCESS FOR AROMATIC HYDROCARBON CONVERSION AND CATALYST THEREFOR

Christian Marcilly, Houilles, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 842,132, Oct. 14, 1977, Pat. No. 4,151,120. This application Feb. 23, 1979, Ser. No. 14,401

Claims priority, application France, Oct. 15, 1976, 76 31320; Dec. 22, 1976, 76 39015

Int. Cl.[2] C07C *3/62*

U.S. Cl. 585—474 **9 Claims**

1. In a process for dismutation and/or transalkylation or alkylaromatic hydrocarbons in the presence of a catalyst, the improvement which comprises employing a catalyst consisting essentially of a mordenite, said mordenite having a molar ratio of SiO_2/Al_2O_3 of from 10 to 100, containing up to 0.5% by weight of sodium, and further containing at least one metal being cobalt, nickel, silver or palladium; wherein said catalyst is produced by the steps of:

(a) eliminating from a mordenite in sodic form having a SO_2/Al_2O_3 ratio close to 10 the major portion of the sodium and incorporating at least one metal being cobalt, nickel, silver or palladium;

(b) drying the resultant catalyst mass at a temperature of from 50° to 150° C.;

(c) subjecting the resultant dried catalyst mass to a dry calcination at a temperature of from 300° to 700° C. in the presence of an inert or oxidizing dry gas containing less than 1% by volume of steam; and

(d) subjecting the resultant dry-calcined catalyst to a wet calcination at a temperature of from 250° to 700° C. in the presence of at least one gas selected from the group consisting of steam, an inert gas and an oxidizing gas, the inert or oxidizing gas containing at least 3% by volume of steam.

4,210,771

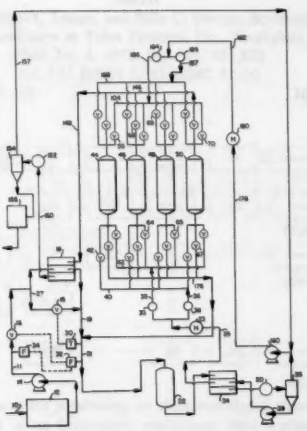
TOTAL ISOMERIZATION PROCESS

Thomas C. Holcombe, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,288

Int. Cl.[2] C07C *5/30*

U.S. Cl. 585—701 **5 Claims**



1. A process for the virtually complete isomerization of normal paraffin hydrocarbons contained in a feed stream consisting essentially of mixed normal and non-normal hydrocarbons comprising

(a) passing a combined reactor feed of said feed stream and a desorption effluent, as hereinafter delineated, through an

isomerization reactor containing an isomerization catalyst and including hydrogen in said reactor feed to convert at least a portion of the normal hydrocarbons in said reactor feed to non-normal hydrocarbons;

(b) passing the reactor effluent from the reactor to an adsorption section and adsorbing the normal hydrocarbons remaining in the reactor effluent in a molecular sieve zeolite adsorber bed and passing the non-normal hydrocarbons out of the adsorption section as adsorber effluent containing an isomerate product;

(c) desorbing the adsorber bed with an essentially constant hydrogen purge gas thereby producing a variable desorption vapor effluent comprised of a constant flow of hydrogen purge gas which contains a varying concentration of desorbed normal hydrocarbons in the range of 20 to 30 mole percent at the beginning of the desorption step to less than 5 mole percent at the end of such step; and

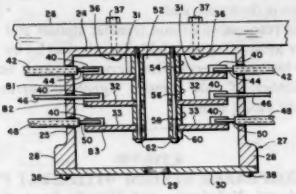
(d) controllably varying the fresh feed stream flow rate and blending such fresh feed stream with the desorption effluent produced in step (c) to provide a constant flow of combined reactor feed in step (a).

4,210,772

PRE-WIRED ELECTRICAL CIRCUIT BOX

Cecil L. Magana, and Gary D. Spears, both of Box 248, Dewey, Okla. 74029

Filed May 15, 1978, Ser. No. 905,728
Int. Cl.[2] H01R 9/00
U.S. Cl. 174—59 10 Claims



1. A prewired electrical circuit box comprising:

(a) a circuit box made of thin walled non-conducting material, having a base of lateral dimension D and a circumferential wall of height H, and means to mount said circuit box to a structure;

(b) a plurality of electrical circuit boards of shape similar to that of said box, and of dimension less than D, assembled co-axially, in parallel spaced relation, and locked in angular relation to each other,

(c) a plurality of electrical fastenings attached to each of said circuit boards at their periphery, in selected individual angularly-spaced pattern, said fastenings on each board connected together electrically in selected patterns which are different on at least two boards.

(d) means to mount said assembly of circuit boards in said circuit box in a fixed angular position;

(e) a plurality of small diameter openings in the wall of said circuit box, each of said openings positioned opposite one of said fastenings on said boards, so that a bare electrical wire of selected diameter can be inserted through an opening into the corresponding fastening opposite that opening; and

(f) means to attach and detach each wire to and from said fastening in which it is inserted;

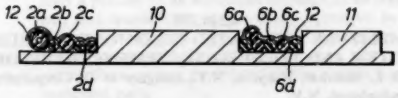
whereby a plurality of electrical wires can be inserted into selected ones of said plurality of openings, and be connected to each other in a preselected manner.

4,210,773

WIRING HARNESS

Roy Haley, Meysey; Brian Cooper, Marlborough, and Pushpkumar D. Changani, Swindon, all of England, assignors to Raychem Limited, London, England

Filed Nov. 17, 1977, Ser. No. 852,571
Claims priority, application United Kingdom, Nov. 22, 1976, 48669/76
Int. Cl.[2] H02G 3/00
U.S. Cl. 174—72 A 7 Claims



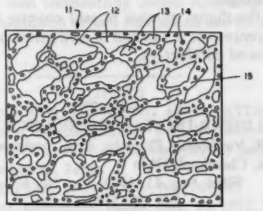
1. A wiring harness having at least a section comprising a plurality of individual elongate electrical conductors arranged at least partly in a common plane in electrically insulated spatial relation and having a change in direction along the length thereof, the radius of curvature of the change in direction lying in said plane, the electrical conductors being fixed in the spatial relation by means of a bonding agent applied as a fluid coating to the conductors after the conductors are arranged in the spatial relationship in the common plane.

4,210,774

FILLED POLYMER ELECTRICAL INSULATOR

Elijah R. Perry, Portola Valley, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jun. 16, 1977, Ser. No. 807,163
Int. Cl.[2] H01B 3/12
U.S. Cl. 174—140 R 12 Claims



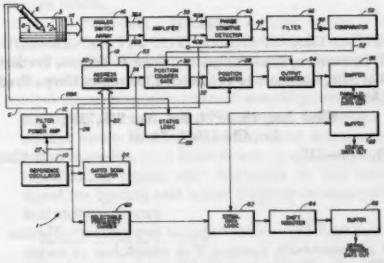
1. A track resistant electrical insulation filled polymer body comprising an intimate mixture of about 85 to 97 weight % of essentially electrically non-conductive inert nonporous inorganic filler particles including a major portion of silica, and 3 to 15 weight % of a resinous adhesive polymer binder bonding said filler particles together into an integral structure, said particles being graded in nonhomogeneous sizes including at least four different grades to maximize loading, over 50% by weight of said filler particles being characterized by a nominal diameter in excess of 0.3 mm, said polymer being formed from a monomer comprising methyl methacrylate characterized by a viscosity less than 150 cps at room temperature.

4,210,775

METHOD AND APPARATUS FOR DIGITIZING THE LOCATION OF AN INSTRUMENT RELATIVE TO A GRID

James L. Rodgers, Tempe, and Billy C. Fowler, Scottsdale, both of Ariz., assignors to Talos Systems, Inc., Scottsdale, Ariz.

Filed Jul. 3, 1978, Ser. No. 921,572
Int. Cl.[2] H04N 1/00; G08C 21/00
U.S. Cl. 178—19 16 Claims



1. Apparatus for producing an electrical signal representing the location of an instrument positioned over a plurality of spaced conductors, said apparatus comprising in combination:

(a) means for producing a signal of predetermined amplitude and frequency;

(b) coil means supported over said spaced conductors by said instrument responsive to said signal producing means for inducing a plurality of electrical signals in said spaced conductors;

(c) means responsive to said signal producing means for

sensing the electrical signals induced in said respective spaced conductors in a predetermined order;

(d) means responsive to said sensing means for detecting a phase reversal between electrical signals induced in ones of said conductors located on opposite sides of said coil means to produce a characteristic signal which changes polarity in response to said phase reversal;

(e) counter means responsive to said signal for counting in response to said signal producing means; and

(f) means responsive to said phase reversal detecting means for stopping said counter means in response to said polarity change;

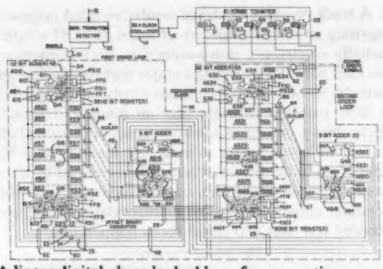
whereby the digital number in said counter means after said stopping represents a location of said instrument with respect to said spaced conductors.

4,210,776

LINEAR DIGITAL PHASE LOCK LOOP

Kenneth R. VanMeter, Phoenix, Ariz., assignor to Harris Corporation, Cleveland, Ohio

Filed Aug. 11, 1977, Ser. No. 823,645
Int. Cl.² H03K *1/00*
U.S. Cl. 375—120 **18 Claims**



12. A linear digital phase locked loop for generating a recovered clock signal, level transitions in which are synchronized with level transitions in an input data signal comprising:

first means for repeatedly generating a digital code, the value of which changes at a frequency which is a multiple of the frequency of said input data signal; and

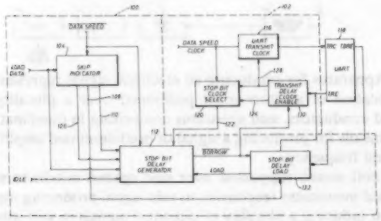
second means, coupled to said first means, for producing said recovered clock having prescribed level transitions which occur at times when the value of said digital code reaches the same preselected number.

4,210,777

PSEUDO-TRANSPARENT STOP BIT GENERATOR

John J. Bowerman, Rock Ridge, and John F. Wilson, Frederick, both of Md., assignors to Frederick Electronics Corp., Frederick, Md.

Filed Jun. 15, 1978, Ser. No. 915,725
Int. Cl.² H04L *25/38*
U.S. Cl. 375—117 **23 Claims**



13. In an improved circuit for generating a stop bit for use in a line terminator unit, said terminator unit having a transmitter for transmitting serial data from said terminator unit to a terminal, said serial data having a stop bit, the improvement comprising:

(a) a detector for detecting the absence of a data transfer signal in a sequence of data transfer signals, said transfer signals generated in the transfer of data between terminator units, said detector generating a clock signal when said absence is detected; and

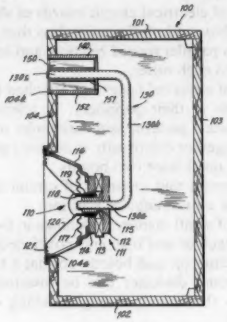
(b) means responsive to said transfer signals and said detector, for generating a variable length stop bit by generating a stop bit time interval that varies in length according to the number of data transfer signals occurring between previous clock signals.

4,210,778

LOUDSPEAKER SYSTEM WITH HEAT PIPE

Sadaaki Sakurai, Yokohama, and Hisashi Suwa, Sagamihara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 5, 1978, Ser. No. 912,292
Claims priority, application Japan, Jun. 8, 1977, 52-74593[U]
Int. Cl.² H04R *1/02*
U.S. Cl. 179—1 E **17 Claims**



1. A loudspeaker apparatus comprising:

transducer means having a drive means and producing acoustic radiation in response to application of an electric current to drive means;

enclosure means having a first aperture in which said transducer means is mounted for emission of said acoustic radiation through said aperture with said drive means in the interior of said enclosure means, and a second aperture; and

heat pipe means having a heat absorbing portion in thermal contact with said transducer means to receive heat generated by said electric current in said drive means and having a heat radiating portion extending through said second aperture to the exterior of said enclosure means for carrying such heat out of the latter, thereby preventing overheating of said drive means.

4,210,779

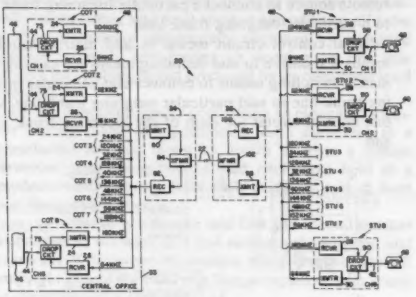
AMPLITUDE MODULATED TELEPHONE CARRIER SYSTEM AND TERMINAL EQUIPMENT THEREFOR

Frank L. Simokat, Babylon, N.Y., assignor to Til Corporation, Lindenhurst, N.Y.

Filed Aug. 11, 1978, Ser. No. 932,706
Int. Cl.² H04J *1/12*
U.S. Cl. 179—2.51 **19 Claims**

1. A telephone carrier system communication receiver for receiving a pre-selected one of a plurality of incoming amplitude modulated carrier signals of different pre-selected frequencies in a plural channel frequency division multiplexed amplitude modulated telephone carrier system, comprising a

pre-detection channel bandpass filter tuned to the frequency of said pre-selected one of said carrier signals for passing said pre-selected one of said incoming carrier signals, and means



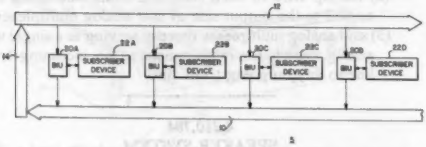
connected to said filter for synchronously detecting the amplitude modulated carrier signal to which said bandpass filter is tuned, the order of said bandpass filter being no greater than two.

4,210,780

MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM

Gregory T. Hopkins, Chelmsford, Mass., and Paul E. Wagner, Nashua, N.H., assignors to The Mitre Corporation, Bedford, Mass.

Filed Mar. 27, 1978, Ser. No. 890,479
Int. Cl.[2] H04J *6/02*
U.S. Cl. 370—80 **14 Claims**



1. An unslotted multiple access bus communications system comprising:

a communications bus including a pair of oppositely-directed, unidirectional signal paths connecting a plurality of remote locations, and a path coupling means for transferring signals from the inbound path to the outbound path at one end of said pair of paths,

a plurality of bus interface units (BIU's), each one of said BIU's being coupled to said bus at an associated one of said remote locations, and including:

A. means for identifying times when no carrier signal is present on said outbound path,

B. means for selectively transmitting modulated carrier signals on said inbound path, wherein the carrier modulation for each of said modulated carrier signals is representative of a data packet, said data packet including at least a portion of an addressed message to be transmitted, said transmitting means being operative to commence a modulated signal carrier transmission only during said identified times,

C. means for receiving modulated carrier signals from said outbound path,

D. means for monitoring said received modulated carrier signals, said monitoring means being operative during a collision window, said collision window, commencing at least as early as t_1 from the time when said transmitter means initiates a transmission on said inbound path, and extending until at least t_2 after said transmission initiation time, where t_1 equals the signal propagation time along said inbound path, said path coupling means, and said outbound path from the location of said one BIU back to said one BIU and t2 equals the signal propagation time along said inbound path, said path coupling means, and said outbound path from the location of the BIU farthest from said path coupling means back to the location of said one BIU,

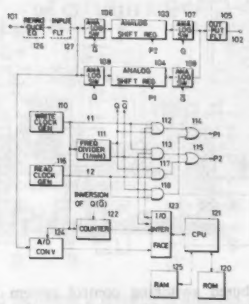
E. transmitter control means responsive to said monitoring means for disabling said transmitting means immediately when at least a portion of said monitored signals fail to correspond to a corresponding portion of the modulated carrier signal of said transmission, and for disabling said transmitting means following the complete transmission of said modulated carrier signal otherwise.

4,210,781

SOUND SYNTHESIZING APPARATUS

Satoshi Nishimura, Kagamigahara; Kenichi Sato, and Youji Sugiura, both of Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 8, 1978, Ser. No. 967,717
Claims priority, application Japan, Dec. 16, 1977, 52-153275; Dec. 16, 1977, 52-153276; Feb. 13, 1978, 53-16046; Mar. 20, 1978, 53-33492; Apr. 20, 1978, 53-48872
Int. Cl.[2] G10L *1/00*
U.S. Cl. 179—15.55 T **62 Claims**



1. A sound synthesizing apparatus, comprising:

means for providing an analog sound signal,

means for providing a signal representing a predetermined sampling period,

storage means,

means for providing a write clock signal having a first frequency,

means for providing a read clock signal having a second frequency,

control means responsive to said sampling period representing signal and said write clock signal for writing in said storage means said analog sound signal as a succession of sound elements, each determined by said sampling period representing signal, and responsive to said read clock signal for reading said sound elements in succession from said storage means,

means for joining said sound elements read from said storage means in succession at a junction therebetween for synthesization of a reproduced sound,

means responsive to said write clock signal for providing first data concerning the waveform of a preceding sound element being stored in said storage means and second data concerning the waveform of a succeeding sound element being stored in said storage means following said preceding sound element,

means responsive to said first data and said second data for evaluating a phase relation between the waveforms of said

preceding and succeeding sound elements for providing closer similarity of said waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements, and

means responsive to said phase relation evaluating means for controlling a phase relation between said preceding and succeeding sound elements for joining said preceding and succeeding sound elements with closer similarity of waveforms of said preceding and succeeding sound elements in the vicinity of said junction between said preceding and succeeding sound elements.

4,210,782
DISTRIBUTED CONTROL TYPE TELEPHONE SWITCHING SYSTEM

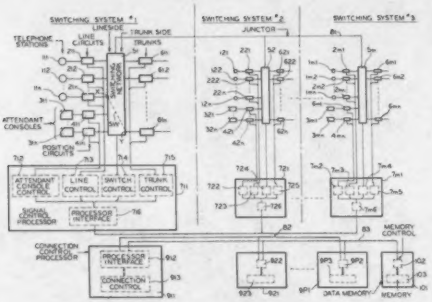
Kazunori Fujita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1978, Ser. No. 917,342

Claims priority, application Japan, Jun. 23, 1977, 52/74862; Jun. 23, 1977, 52/74863; Aug. 8, 1977, 52/95301; Dec. 9, 1977, 52/147911; Mar. 2, 1978, 53/24092; Mar. 15, 1978, 53/30169; Mar. 15, 1978, 53/30170; Mar. 22, 1978, 53/33349

Int. Cl.[2] H04Q *3/54*

U.S. Cl. 179—18 ES **15 Claims**



4. A distributed switching control system comprising a plurality of separate switching systems, each of said separate switching systems having its own separate switching network, whereby there are a plurality of such switching networks, each having its own characteristics, first data processor means individually associated and compatible with each of said separate switching networks, second data processor means common to all of said separate switching networks, and means for exchanging a common form of signals between said first and second data processor means for controlling said separate switching networks as if they were a single integrated network despite any differences in the characteristics of the separate switching networks.

4,210,783
DIGITALLY CONTROLLED TELEPHONE ANSWERING SWITCHING SYSTEM

Ronald P. Vicari, Elmwood Park, N.J., and Barry Yampol, Oyster Bay, N.Y., assignors to Graphic Scanning Corp., Englewood, N.J.

Division of Ser. No. 591,233, Jun. 27, 1975, Pat. No. 3,987,252, which is a continuation-in-part of Ser. No. 392,634, Aug. 29, 1973, abandoned. This application Oct. 18, 1976, Ser. No. 733,357

Int. Cl.[2] H04Q *3/60*

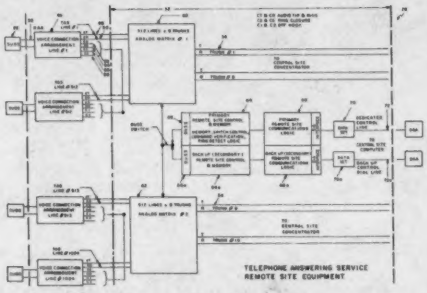
U.S. Cl. 179—18 FC **2 Claims**

1. A digitally remote controlled trunk line concentrator for coupling incoming telephone circuit trunk lines to a lesser number of outgoing telephone circuit trunk lines comprising:

(a) matrix switching means for interconnecting any one of said incoming trunk lines to any one of said outgoing trunk lines;

(b) decoding means responsive to a digital command from a remote source to connect a particular incoming trunk line to a particular outgoing trunk line;

(c) digital control circuit means in said matrix switching means responsive to said decoding means for causing said matrix switching means to connect said particular incoming trunk line to said particular outgoing trunk line, with one control circuit for each of the incoming trunk lines; and



(d) a bidirectional analog multiplexer in the control circuit associated with each of the incoming trunk lines,

(1) the tip wire of each incoming trunk line being connected to the input side of said analog multiplexer and the ring wire of each incoming trunk line being grounded, and

(2) the tip wire of each outgoing trunk line being connected to the output side of said analog multiplexer,

(3) said analog multiplexer thereby serving as a single wire analog switch for interconnecting an incoming trunk line to any outgoing trunk line.

4,210,784
SPEAKER SYSTEM

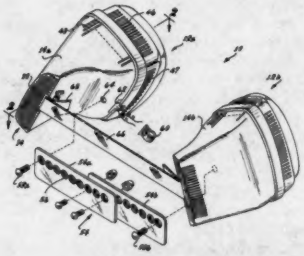
William W. Phillips, Rancho Palos Verdes, Calif., assignor to Shaymar, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 728,933, Oct. 4, 1976, Pat. No. 4,061,877. This application Apr. 21, 1977, Ser. No. 789,457

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

Int. Cl.[2] H04R *1/32*

U.S. Cl. 179—146 H **8 Claims**



1. A stereo speaker system structure for mounting at the back of a seat, adapted for use as a sound enhancing adjunct to a conventional stereo system including a source of stereo electrical signals to enhance stereo separation and clarity of the overall sound, said stereo speaker system comprising:

first and second loud speaker assemblies, each including at least one loud speaker;

an enclosure means for enclosing each of said loud speaker assemblies, comprising a shell of rigid material substantially surrounding said loud speaker assembly on all sides to form a chamber substantially occupied by said loud speaker assembly and having an opening on one side thereof for emitting sound produced by its respective loud speaker;

at least one elongated spacer comprising an elongated member having means for positioning each enclosure at a preselected location along its length to form a system structure comprising two of said enclosures held at a predetermined spacing from each other by said at least one elongated spacer;

means operable for positioning said first and second speaker assemblies at the back of a seat respectively adjacent and rearward of the expected position, respectively of the left and right ears of the head of a seat occupant to emit sound at the occupant's ears; and

means operable for electrically coupling the speakers to the source of stereo electrical signals.

4,210,785

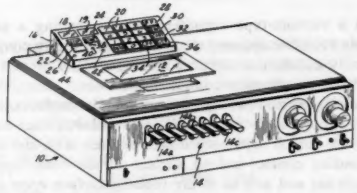
TAPE REPLAY SYSTEM

William B. Huber, Oak Park; Ian L. Bower, Rosemont; James A. Flynn, LaGrange, and Gary C. Elfring, Lombard, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 28, 1978, Ser. No. 946,988

Int. Cl.[2] G11B *27/00, 5/02*

U.S. Cl. 179—100.1 PS **17 Claims**



1. In a tape playback machine, a system for selecting and replaying desired segments of a recorded tape in any predetermined sequence comprising:

means for reading a tape having encoded thereon a plurality of programs, tape location indicia, and program location information correlating the position of the programs on the tape with the tape location indicia;

operator-actuable means for selecting programs for replay and the sequence in which the selected programs are to be replayed; and

controller means responsive to said operator selection for determining from said program location information the location on the tape of said selected programs and for actuating the playback machine to replay the selected programs in the sequence selected,

whereby selected programs on the tape are replayed in any desired sequence, irrespective of their location on the tape.

4,210,786

MAGNETIC FIELD STRUCTURE FOR PLANAR SPEAKER

James M. Winey, White Bear Lake, Minn., assignor to Magnepan, Incorporated, White Bear Lake, Minn.

Filed Jan. 24, 1979, Ser. No. 6,007

Int. Cl.[2] H04R *9/06*

U.S. Cl. 179—115.5 PV **10 Claims**

1. An acoustical electromagnetic transducer, comprising

a film type diaphragm having conductor means on the surface thereof and arranged in a plurality of elongate and spaced conductor runs through which a sound generating current is to be carried, and

a magnetic structure confronting the diaphragm in spaced relation and having a plurality of elongate and spaced magnetic strips extending along each other and defining

elongate magnetic gaps therebetween and extending along the conductor runs of the diaphragm, the magnetic strips being permanent magnets establishing magnetic flux in and adjacent the gaps, magnetic strips adjacent to each other being formed of different magnetic materials with significantly different magnetic properties.

4,210,787

KEYBOARD CONSTRUCTION

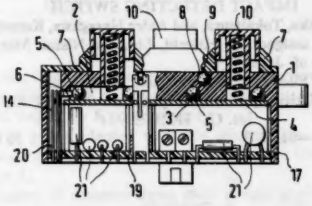
Alfred Zielke, Peine-Vöhrum, Fed. Rep. of Germany, assignor to ELMEG-Electro-Mechanik Gesellschaft mit beschränkter Haftung, Peine, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 914,536

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727433

Int. Cl.[2] H01H *9/26*

U.S. Cl. 200—5 EA **4 Claims**



1. A keyboard including a member containing intersecting channels filled with displacement bodies to be displaced by tongues extending from keys, so that upon pressing a key the bodies in two channels are displaced resulting, respectively, in the displacement of actuation pins, respectively, at one end of each channel, the improvement comprising:

a printed circuit board;

a plurality of contact springs mounted on the printed circuit board;

circuit elements and interconnect lines on the printed circuit board for connection to the contact springs on the board, said board with mounted springs and circuit elements constituting an independent subassembly; and

means for mounting said board to said member but in spacedapart relation thereto, thereby placing free ends of the contact springs into actuation ranges of said pins and for engagement therewith so that the pins upon displacement operate the respective contact springs.

4,210,788

MANUAL OPERATING HANDLE ASSEMBLY FOR CIRCUIT INTERRUPTER DEVICES

Norman J. Stranczek, Niles, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Jul. 10, 1978, Ser. No. 923,232

Int. Cl.[2] H01H *9/28*

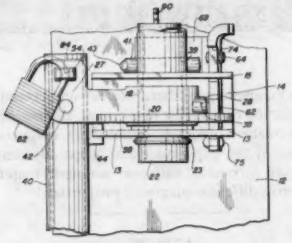
U.S. Cl. 200—42 T **15 Claims**

1. A mechanism for permitting manual operation of an interrupter device to open the interrupter device when a first set of

conditions is extant and for inhibiting additional operation of the interrupter device to reset the interrupter device unless a second set of different conditions is extant, which comprises:

mounting means;

an operating shaft suitably supported by said mounting means and operably connected to the interrupter device for opening and resetting the interrupter device;



handle means for manually rotating said operating shaft; and

interlock means for, in a first position, limiting the rotation of said operating shaft by said handle means to the amount of rotation required to open the interrupter device, and for, in a second position, not limiting the rotation of said operating shaft so that said operating shaft can be rotated by said handle means to reset the interrupter device.

4,210,789

IMPACT DETECTING SWITCH

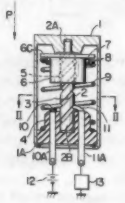
Kenichi Ushiku, Tokaimura, and Akira Hasegawa, Katsuta, both of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of, Japan

Filed Oct. 18, 1977, Ser. No. 843,268

Claims priority, application Japan, Oct. 20, 1976, 51/124882

Int. Cl.[2] H01H *35/14*

U.S. Cl. 200—61.45 R **32 Claims**



1. An impact detecting device comprising:

a casing;

a movable member capable of moving substantially along a straight line relative to said casing;

means for rotating said movable member during the movement of said movable member substantially along the straight line;

elastic means interposed between said casing and said movable member for elastically loading said movable member in a direction along said straight line to resist the movement of said movable member;

a switch means to be closed, when said movable member is moved a given distance relative to said casing against the action of said elastic means,

wherein said movable member has a center hole extending therethrough in the direction of the movement of said movable member; said means for rotating said movable member comprising guide means which is provided with spiral grooves in the outer peripheral surface thereof and has at least one end thereof secured to said casing and extends through said center hole of said movable member, and interconnecting means engaging said movable member in given positions as well as said spiral grooves, and movable along said spiral grooves.

4,210,790

VACUUM-TYPE CIRCUIT INTERRUPTER

Yukio Kurosawa; Hiroyuki Sugawara, and Yukio Kawakubo, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 2, 1977, Ser. No. 802,941

Claims priority, application Japan, Jun. 9, 1976, 51-67339

Int. Cl.[2] H01H *33/66*

U.S. Cl. 200—144 B **44 Claims**

1. In a vacuum-type circuit interrupter having a pair of relatively movable opposed electrodes carried respectively by electrically conductive support members, each of said electrodes having a structure comprising:

an annular portion having opposite annular surfaces, one of said annular surfaces providing an annular contact-making surface which separably makes contact with the corresponding contact-making surface of the other opposite electrode and acts as an arc-running surface upon actuation of said circuit interrupter to break the circuit therethrough;

a substantially disc-shaped recessed portion surrounded by said annular portion and having substantially circular opposite surfaces, said disc-shaped portion being secured to said support member at the central area of one of said substantially circular opposite surfaces thereof, the other substantially circular surface being sunk below said contact-making surface to provide a sunk surface untouchably opposing the corresponding sunk surface of the opposite electrode;

first self-acting magnetically driving means for driving an arc produced on said contact-making surface to impel the same in a circumferential direction of said contact-making surface; and

second self-acting magnetically driving means for driving an arc produced at the recessed portion surrounded by said annular portion to shift the same toward and onto said contact-making surface.

4,210,791

SLIDE SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,147

Int. Cl.[2] H01H *9/02, 15/02*

U.S. Cl. 200—164 R **6 Claims**

1. A slide switch comprising

a base member of dielectric material having laterally spaced side walls, integrally connected end walls extending be-

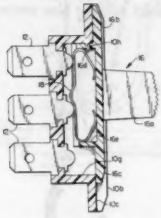
tween said side walls, and a rear wall cooperating with said side and end walls to define a forwardly open recess

a plurality of fixed contacts having portions projecting forwardly through said rear wall and arranged in at least one row oriented longitudinally on said base member

a slide member of dielectric material having a length greater than the longitudinal dimension of said recess in the direction of said row of contacts, and having laterally projecting portions slidably received in elongated slots defined in said base side walls to support said slide member for slidable movement relative to said base and to limit such movement so said base recess remains covered by said slide member

a bridging contact in a rearwardly open recess provided in said slide member, and

said dielectric members housing all of said contacts and defining a closed environment for said contacts consisting only of said dielectric slide and base members.



4,210,792

INDUCTION HEATING APPARATUS WITH LOAD DETECTING AND CONTROL CIRCUIT

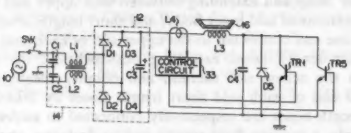
Iwao Higuchi, Ayase, and Takashi Fujita, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Jun. 22, 1977, Ser. No. 808,893

Claims priority, application Japan, Jul. 27, 1976, 51/89468; Jul. 27, 1976, 51/89471

Int. Cl.² H05B 5/04

U.S. Cl. 219—10.49 R **1 Claim**



1. An induction heating apparatus comprising first and second DC power source terminals, electric energy storing means connected between said first and second DC power source terminals, a series circuit including a heating coil and a capacitor connected across said power source terminals, a rectifying element connected in parallel with said capacitor and in reverse direction with respect to said DC power source terminals, first and second switching means connected in parallel with said capacitor, means for detecting the current flowing through said heating coil, and a control circuit comprised of a pulse generator which is connected to said current detecting means for generating a pulse when said current detecting means detects that the current flowing through the heating coil and the rectifier element in the forward direction reaches a predetermined value, a monostable multivibrator circuit triggered by the output pulse from said pulse generator, a bistable multivibrator circuit whose output state is reversed in response to the output signal from said monostable multivibrator circuit, a first energizing signal generating circuit responsive to the output signals from said monostable multivibrator circuit and said bistable multivibrator circuit for applying an output signal to said first switching means when both of said monostable multivibrator circuit and said bistable multivibrator circuit are set, and a second energizing signal generating circuit responsive to the output signal of said monostable multivibrator circuit and the invention of the output signal of said bistable multivibrator circuit for applying an output signal to said second switching means when said monostable multivibrator circuit is set and said bistable multivibrator circuit is reset.

4,210,793

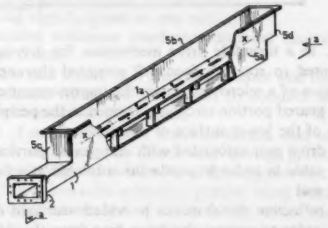
MICROWAVE APPLICATOR FOR RADIATING MICROWAVES TO AN ELONGATED ZONE

Christian Fournet-Fayas, Bruguieres, France, assignor to Agence Nationale de Valorisation de la Recherche (A.N.-V.A.R.), Neuilly sur Seine, France

Filed Mar. 6, 1978, Ser. No. 883,899

Int. Cl.² H05B 9/06

U.S. Cl. 219—10.55 F **6 Claims**



1. A microwave applicator for irradiation an elongated zone of the length L with energy having a frequency range around a central frequency F comprising:

a wave guide adapted to guide microwaves within said frequency range, said wave guide having a length greater than L,

a plurality of resonant shunt slots in said wave guide and arranged on a longitudinal axis of said wave guide in the axial plane, the centers of said slots being separated by a distance equal to a whole number of half wave length $\lambda g/2$, wherein λg is the length of the guided wave corresponding to the frequency F,

inside posts within said wave guide on the transverse axis of said slots and adjacent thereto, wherein said inside posts associated with slots separated by an uneven number of half wave length are on opposite sides of said slots and the heights of said inside posts are such as to provide a desired power distribution along the wave guide,

outside posts positioned outside of said wave guide and at the same points as said inside posts,

said inside posts including a guide member projecting into said wave guide, and said outside posts including a threaded shaft passing through the wall of said wave guide and projecting outwardly thereof and inwardly thereof into said guide members, whereby the height of said outside posts are adjustable independently of the heights of said inside posts, and

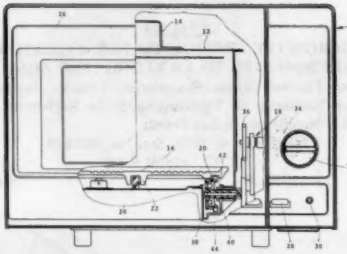
a flange member comprising lateral flanges and frontal flanges extending from the periphery of said wave guide and surrounding said shunt slots such that the volume defined by said flange member and the face of said wave guide having said shunt slots is excited by the radiation in phase from said shunt slots for applying a uniform predetermined power intensity having only slight variation with frequency to an elongated zone adjacent said flange member.

4,210,794

TURNTABLE DRIVE IN A MICROWAVE OVEN

Ichiro Oguri, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 25, 1977, Ser. No. 800,478
Claims priority, application Japan, May 26, 1976, 51-67829
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 F 17 Claims



1. In a turntable drive mechanism for driving a turntable adapted to rotate a foodstuff mounted thereon at the base portion of a microwave oven the improvement comprising:

a geared portion circularly formed at the peripheral portion of the lower surface of a turntable;

a drive gear associated with said geared portion of the turntable in order to rotate the turntable at a fixed velocity; and

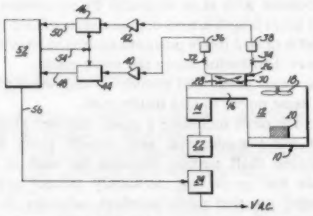
a reflection metal means provided near said drive gear in order to protect the drive gear from the microwave energy generated by the microwave oven.

4,210,795

SYSTEM AND METHOD FOR REGULATING POWER OUTPUT IN A MICROWAVE OVEN

Ronald R. Lentz, Wayzata, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 30, 1978, Ser. No. 964,917
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 B 19 Claims



1. In a microwave oven having a food heating cavity, a magnetron, and waveguide means for coupling the magnetron to the heating cavity, means for controlling the microwave oven heating cycle comprising:

(a) detector means coupled to the microwave oven for measurement of the microwave reflection coefficient within the oven; and

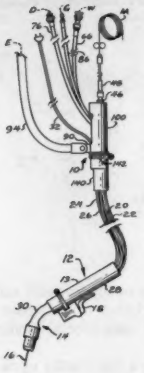
(b) means connected to said detector means and to the magnetron for regulating the power output of the magnetron in response to said measured reflection coefficient.

4,210,796

UTILITIES SUPPLY STATION FOR WELDING GUN

Delford A. Moerke, 1020 Shady Oak Dr., North Mankato, Minn. 56001

Filed May 24, 1978, Ser. No. 908,914
Int. Cl.[2] B23K 9/32; H01R 3/04
U.S. Cl. 219—137.63 9 Claims



1. A welding gun utilities station through which a welding gun is connected to utilities such as welding voltage, arc shielding gas and cooling fluid, said station comprising an inner body and an enclosing sleeve of insulative material, said inner body embodying spaced upper and lower block portions and an axially offset tubular portion between said block portions defining a passageway through which a consumable wire electrode feeds; the lower end of said tubular portion being adapted for connection to an electrode receiving casing which leads to the welding gun, at least the lower block portion being of electrically conductive metal and containing spaced ports to the lower ends of which a gas hose, a cooling fluid hose and a fluid drainage hose leading to the welding gun are respectively connected, said sleeve of insulative material having an access slot through the wall thereof opposite said tubular portion of the inner body and extending between said upper and lower block portions of said inner body, and short length hoses each having one end connected to the upper end of each said ports, said short length hoses extending outwardly of the sleeve through the access slot thereof, and coupler means at the opposite end of each said short length hoses by which said short length hoses are respectively connected to outlets of a gas supply, a cooling fluid supply and to drainage, each said coupler means including normally closed valve means which is opened by its connection of the short length hoses to said outlets.

4,210,797

FOLDABLE CURLING IRON PROVIDING FOR SELF-STORAGE AND SAFETY DISCONNECTION

Patrick M. Tomaro, Maplewood, N.J., assignor to Conair Corporation, Edison, N.J.

Filed Nov. 4, 1977, Ser. No. 848,471
Int. Cl.[2] H05B 3/06; A45D 1/04, 2/24; H01H 3/16
U.S. Cl. 219—225 13 Claims

1. An electrically heated curling iron comprising:

a tubular barrel having an electric heating element therein;

a hollow handle;

barrel pivot means for pivotally mounting said tubular barrel to said handle, said barrel being pivotal through a pivot angle from an operative position extending forwardly of said handle to a folded storage position within said handle through an opening in a side of said handle,

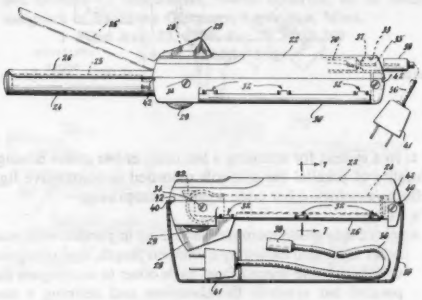
a clamp extending along most of said tubular barrel and

having a transverse shape conforming to the external contour of said tubular barrel,

clamp pivot means for pivotally mounting said clamp to said tubular barrel,

clamp biasing means for biasing said clamp against said tubular barrel throughout said pivot angle of said tubular barrel,

electrical connector means in said handle for connecting said electrical heating element in said tubular barrel to an electric source when said tubular barrel is in its extended position, and



two doors closing said opening and pivotal inwardly through said opening in the side of said handle and into said handle, but spring biased outwardly to conform with the handle outer surface when said tubular barrel is in its extended position, said tubular barrel forcing said doors inwardly when in its folded storage position within said handle,

whereby an electrically heated curling iron which is foldable into a compact form is provided.

4,210,798

DEVICE FOR DETACHABLY MOUNTING GLASS ON TIMEPIECE CASES

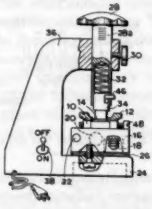
Sadao Ode, Houya, and Toshikazu Hatuse, Tanashi, both of Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed May 4, 1978, Ser. No. 902,945

Claims priority, application Japan, Feb. 9, 1978, 53-13006

Int. Cl.² H05B *1/00*

U.S. Cl. 219—243 **12 Claims**



1. A device for detachably mounting a glass on a timepiece case, comprising:

a. a main body including a supporting member and a substrate;

b. a heater board secured to said substrate and including a temperature control means;

c. a case holding frame disposed above said heater board in thermal contact therewith for holding the timepiece case; and

d. a push rod adjustably supported by said supporting member of said main body for urging the glass toward or away from said timepiece case.

4,210,799

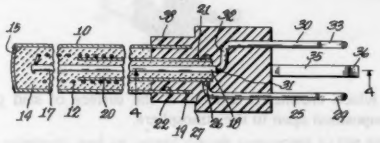
ELECTRIC HEATING UNITS

Walter J. Dzaack, Glenshaw, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 4, 1978, Ser. No. 948,569

Int. Cl.² H05B *3/08*

U.S. Cl. 219—541 **4 Claims**



1. An electric heating element, comprising:

a tubular metal sheath, closed at one end,

a helically coiled resistance conductor disposed centrally within said sheath,

material within said sheath to electrically insulate said resistance conductor from said sheath and to conduct heat from said conductor to said sheath,

a metal tube of smaller diameter than said sheath, said tube being insulated from said sheath and having portions extending inwardly and outwardly of the opposite end of said sheath, said inwardly extending portion being electrically connected to one end of said helically coiled resistance conductor and said outwardly extending portion providing one terminal end,

a return conductor extending longitudinally within and insulated from said helically coiled resistance conductor and electrically connected to the latter at the opposite end thereof, said return conductor having a portion extending through said tube in insulated manner, and extending from the terminal end of said tube to provide another terminal end,

a pair of terminal pins, one electrically connected to said tube terminal end and the other terminal pin electrically connected to said return conductor terminal end, said terminal pins being spaced apart and connectable to a source of electrical energy,

and a rigid plastic block molded over said sheath opposite end and encapsulating portions of said terminal pins adjoining their connections with said tube terminal end and said return conductor terminal end, and rigidly holding said terminal pins in spaced relation.

4,210,800

HEATING ELEMENT COMPRISING A PTC-RESISTOR BODY

André M. A. Van Bokestal, and Charles J. G. Belhomme, both of Brussels, Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 30, 1978, Ser. No. 873,419

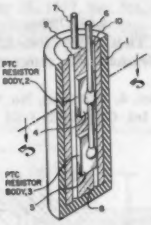
Claims priority, application Netherlands, Feb. 21, 1977, 7701813

Int. Cl.² H05B *3/44*

U.S. Cl. 219—544 **2 Claims**

1. A heating element comprising at least one positive temperature coefficient resistor body embedded in a heat conductive potting composition, said heat conductive potting composition surrounded by a heat conductive casing except for one surface thereof open to the atmosphere, electric current conductor means attached to said positive temperature coefficient resistor body and extending through said potting composition and out of said heat conductive casing and as a means for preventing explosions from occurring in said heating element,

at least one channel positioned in said potting composition within a heat-effective distance from said resistor body, an end



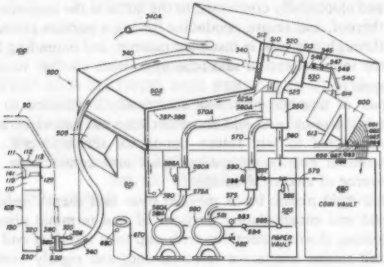
of which channel is situated at the surface of said potting composition open to the atmosphere.

4,210,801

FARE COLLECTION SYSTEM AND COMPONENTS THEREOF

Jim H. Gomez, Kankakee, and Jose E. Davila, Bourbonnais, both of Ill., assignors to Transit Systems Technology, Inc., Kankakee, Ill.

Filed Nov. 30, 1977, Ser. No. 855,970
Int. Cl.[2] G06M *3/08, 7/06*
U.S. Cl. 235—92 AC **50 Claims**



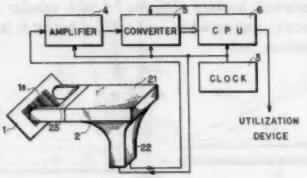
1. A fare collection system comprising a plurality of mobile fare boxes and a stationary central processing unit, each of said fare boxes having a collection chamber for receiving fares therein, a counter-recorder in each fare box for counting and recording the fares as the fares are deposited in the associated chamber, an acceptor coupling on each of said fare boxes providing access to the contents of the associated chamber, an extractor conduit having one end in communication with said central processing unit and an extractor coupling on the other end thereof, said extractor coupling cooperating with each of said acceptor couplings to provide communication between the associated chamber and said central processing unit for conveying the contents of said chamber to said central processing unit, and a high speed sorter-counter-recorder in said central processing unit for sorting and counting and recording the contents of each of said fare box chambers one-by-one, whereby to make a first count of the fares in each fare box at the fare box and to make a second count of the fares in each fare box at the central processing unit for comparison with the first count.

4,210,802

BAR CODE SCANNER

Toshiyasu Sakai, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 12, 1978, Ser. No. 923,966
Claims priority, application Japan, Jul. 26, 1977, 52/89962
Int. Cl.[2] G06K *13/06, 7/10*
U.S. Cl. 235—483 **5 Claims**



1. In a system for scanning a bar code or bar codes having a plurality of parallel bar symbols recorded in contrastive light reflective colors, a bar code scanner comprising:

a casing;

a pair of side guide members extending in parallel with each other from said casing by a uniform length, said side guide members being spaced from each other to encompass said parallel bar symbols therebetween and defining a scan line, said scan line being visually observable at least in the regions thereof adjacent the top portions of said side guide members to facilitate proper positioning of the scanner along the bar code; and

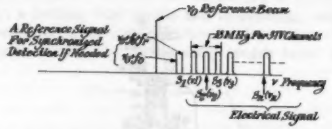
an image sensor supported within said casing and having a plurality of light responsive elements arranged in a transverse relation with said side guide members, said light responsive elements being activated one by one to convert reflected light applied from said parallel bar symbols through the space defined by said side guide members into responsive electric signals.

4,210,803

METHOD AND APPARATUS FOR SIGNAL TRANSMISSION VIA AN OPTICAL FIBER

Charles C. Ih, Newark, Del., assignor to University of Delaware, Newark, Del.

Filed Mar. 15, 1979, Ser. No. 20,750
Int. Cl.[2] H04B *9/00*
U.S. Cl. 455—610 **14 Claims**



1. A method of signal transmission via an optical fiber transmission line comprising

providing a first substantially monochromatic beam of radiation reserved as a carrier radiation beam,

providing a second substantially monochromatic beam of radiation frequency-interlocked with said first beam of radiation to a preselected degree dependent upon the transmission service to be effected reserved as an information radiation beam,

imposing an electrical signal to be transmitted upon said information radiation beam, thereby responsively modulating said information radiation beam,

combining said carrier radiation beam and said modulated information radiation beam,

transmitting said combined radiation via said optical fiber transmission line to a preselected destination, and

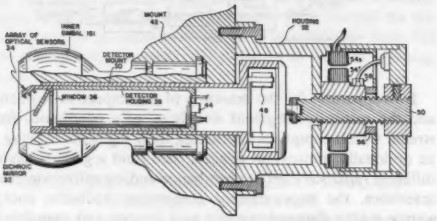
detecting said combined radiation with a square law detector to thereby obtain a subcarrier signal constituting the difference in frequency between said carrier radiation beam and said information beam upon which said electrical signal is modulated as the beat frequency of said carrier radiation beam and said information radiation beam, and demodulating to reconstitute said original electrical signal.

4,210,804

FREE-GYRO OPTICAL SEEKER

Richard R. LaTorre, Bedford; Barry N. Levitt, Framingham, and Gordon C. MacKenzie, North Billerica, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Aug. 22, 1978, Ser. No. 936,269
Int. Cl.[2] F42B *15/02*
U.S. Cl. 250—203 R **2 Claims**



1. In an optical seeker for a guided missile having a longitudinal axis, such seeker including focusing means spin-stabilized about a movable line of sight having a point in common with the longitudinal axis, optical sensor means disposed in the focal plane of the focusing means when the line of sight and the longitudinal axis are coincident and a mirror disposed between the focusing means and the optical sensor means to position the center of the focal plane at a point removed from the longitudinal axis, the improvement comprising:

(a) a universal joint having a first part affixed to the guided missile and a second part rotatably mounted on the first part, the opposing surfaces of the first and second part being complementary spherical surfaces centered on the longitudinal axis of the guided missile;

(b) a passageway formed through the first part coaxially with the longitudinal axis of the guided missile;

(c) a hollow support member slidably disposed within the passageway to position the optical sensor means and the mirror along the longitudinal axis of the guided missile;

(d) means for affixing the focusing means to the second part of the universal joint and for orienting and spinning such second part and focusing means to spin-stabilize the optical axis of the focusing means in a given direction; and

(e) means for moving the hollow support member along the longitudinal axis in accordance with the direction of the line of sight of the focusing means to maintain the center of the focal plane of such focusing means substantially in coincidence with the center of the optical sensor means.

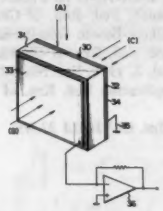
4,210,805

SEMICONDUCTOR RADIATION DETECTOR

Tetsuji Kobayashi; Tohru Sugita, both of Yokohama, and Noboru Matsuo, Nagasaki, all of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Kawasaki, Japan

Filed Feb. 15, 1978, Ser. No. 877,942
Claims priority, application Japan, Feb. 17, 1977, 52-16375; Feb. 21, 1977, 52-17951; Feb. 24, 1977, 52-19526; Feb. 24, 1977, 52-19527; Feb. 24, 1977, 52-19528; May 19, 1977, 52-58074
Int. Cl.[2] G01T *1/22*
U.S. Cl. 250—370 **13 Claims**

1. A semiconductor radiation detector comprising a detector unit including a detection element having a single crystal silicon substrate with an impurity concentration of less than 1×10^{14} cm^{-3}, a metal layer formed on one surface of the substrate to provide a surface barrier between the metal layer and the substrate, the surface barrier having a rectifying characteristic, and an electrode layer formed on the other surface



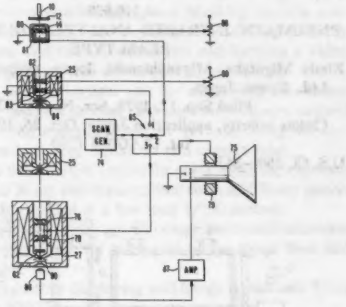
of the substrate, and an output circuit connected to the metal layer and electrode layer of the detection element to obtain an output corresponding to an amount of X-ray or gamma ray radiation incident on the detector unit without the application of a bias across the detection element.

4,210,806

HIGH BRIGHTNESS ELECTRON PROBE BEAM AND METHOD

Alec N. Broers, Purdys Station, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,518
Int. Cl.[2] G01M *23/00*
U.S. Cl. 250—311 **22 Claims**



1. Apparatus for generating a high brightness electron beam, comprising:

an electron gun for producing a beam of electrons having a spatial distribution of electron intensity and an angular distribution of electron intensity;

an electron optical column for demagnifying said beam into a final beam focused upon a target plane, said column accepting for said final beam only a portion of said angular distribution and only a portion of said spatial distribution;

means for varying the portion of said angular distribution accepted by said column for said final beam;

means for varying the portion of said spatial distribution accepted by said column for said final beam;

means for measuring the intensity of said final beam while varying the accepted portion of said angular distribution and the accepted portion of said spatial distribution in order to determine the portion of said angular distribution and the portion of said spatial distribution which together result in maximum final beam intensity; and

means for causing said column to accept for said final beam

the determined portion of said angular distribution and the determined portion of said spatial distribution, thereby maximizing the effective brightness of said final beam.

4,210,807

HEAT IMAGING APPARATUS

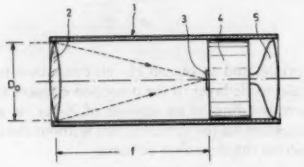
Roderich Rüger, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 921,945

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731739

Int. Cl.[2] H01J *31/49*

U.S. Cl. 250—330 3 Claims



1. A heat imaging apparatus comprising a heat image system including optical means having a focal surface, heat detector means located in said focal surface, said optical means further having a diffusion circle of given dimension, said heat detector means comprising at least one heat detector element, each heat detector element having a size (A_D) smaller than said given dimension of said diffusion circle.

4,210,808

PNEUMATIC INFRARED ANALYZER OF THE SINGLE BEAM TYPE

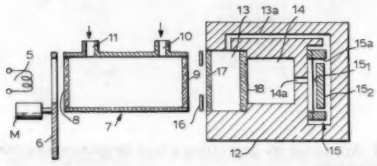
Kimio Miyatake, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Sep. 12, 1978, Ser. No. 941,638

Claims priority, application Japan, Oct. 26, 1977, 52-128956

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—343 4 Claims



1. A detector means for a single beam pneumatic infrared analyzer, comprising:

a front light receiver means contained within a first containing structure, said containing structure further containing therein a control gas;

a rear light receiver means positioned in series behind said front light receiver means, said rear light receiver means being contained within a second containing structure, said second containing structure further containing said same control gas as said first containing structure;

sample cell means positioned in front of said front receiver means, said sample cell means containing a sample gas;

infrared light source means for directing infrared light through said sample cell means and said sample gas, said infrared light further striking said receiver means for determining the concentration of said sample in said sample cell means according to the difference in absorption of said infrared rays at said two receiver means; and

adjustable light admission means positioned between said sample cell means and said two receiver means for blocking out the peripheral portions of said infrared light entering said front receiver means.

4,210,809

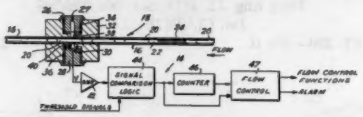
METHOD AND APPARATUS FOR THE NON-INVASIVE DETERMINATION OF THE CHARACTERISTICS OF A SEGMENTED FLUID STREAM

Milton H. Pelavin, Chappaqua, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,034

Int. Cl.[2] G01N *21/26*

U.S. Cl. 250—343 26 Claims



1. In apparatus for the detection of the respective segments, and the respective segment interfaces, of a continuous fluid stream which comprises alternating fluid segments flowing in an optionally transparent conduit, said fluid segments having different radiation energy absorbance and/or refraction characteristics, the improvements comprising, radiation energy source means disposed without said conduit and operable to irradiate the same and said flowing fluid stream, radiation energy detecting means disposed without said conduit and operable to detect the radiation energy from said source means which is transmitted through said conduit and said flowing fluid stream, and to output a signal indicative thereof, and means to process said output signal to indicate said fluid segments and said segment interfaces, respectively, wherein, said fluid segments comprise segments of liquids, and wherein the spectral content of said radiation energy is generally outside the radiation energy absorbance range of said liquids.

4,210,810

RADIATION SCANNING SYSTEM

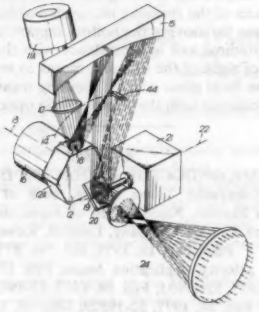
Peter J. Berry, and Herbert M. Runciman, both of Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Aug. 31, 1978, Ser. No. 938,517

Claims priority, application United Kingdom, Sep. 13, 1977, 38087/77

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—347 5 Claims



1. A radiation scanning system comprising a radiation detector, a transfer lens disposed to form a real image of said detector, a first scanning means comprising a rotor having a plural-

ity of reflective planar facets disposed uniformly around its circumference, each facet having its normal substantially perpendicular to the axis of rotation of the rotor, said rotor being interposed between the transfer lens and the image of the detector formed by the transfer lens and having its axis of rotation intersecting the optical axis of the transfer lens and disposed in such a way that as the rotor is rotated the aforesaid image is caused to move in a substantially circular locus, a concave substantially-spherical mirror located substantially concentrically with the aforesaid detector locus and having the locus substantially at the focal surface of the concave mirror so that following reflection from the aforesaid concave mirror the rays from the detector for any given rotational position of the rotor are collimated to a parallel bundle, and a second scanning means for deflecting the aforesaid parallel bundle of rays in a direction substantially perpendicular to the direction of deflection due to the first scanning means, said second scanning means being located substantially at the pupil formed by the intersection of the different bundles of parallel rays from the detector for different rotational positions of the first scanning means.

4,210,811

DRIVE FOR MOVEABLE SHIELD IN LUGGAGE SCREENING APPARATUS

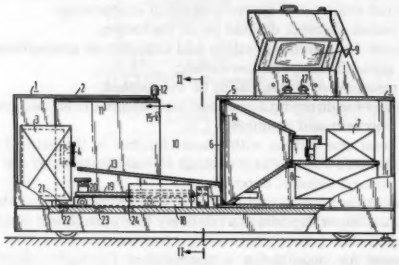
Manfred Dennhoven, Wiesbaden, and Claus Kunze, Taunusstein, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Wiesbaden-Dotzheim, Fed. Rep. of Germany

Continuation of Ser. No. 734,333, Oct. 20, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 945,097

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1975, 2549211

Int. Cl.[2] G01K *23/00*

U.S. Cl. 250—358 R **5 Claims**



1. In a radiation-screening apparatus for inspecting sealed articles such as parcels and luggage, including a moveable shield selectively enclosing a monitoring duct, and drive means for moving said shield with respect to a fixed housing of said apparatus, the improvement comprising wherein:

said drive means comprises:

an electromagnetically operable linear motor means having a rail and a stator, one of said rail and stator being attached to the shield and the other being fixed in the housing; and motor control means connected to said linear motor means and to an electrical power supply, said control means including three proximity switches and an activator, said switches and activator being mounted to be moveable relative to each other, two of said switches comprising limit end switches terminating electrical power to drive said linear motor at opposite ends of travel of said shield and the third proximity switch comprising a braking switch reducing electrical power to said linear motor between opposite ends of travel of said shield.

4,210,812

X-RAY IMAGING DIAGNOSTIC APPARATUS WITH LOW X-RAY RADIATION

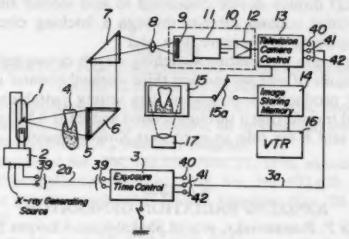
Shoichi Ando; Kiminobu Inaba, and Tomoaki Yoshida, all of Tokyo, Japan, assignors to The Foundation: The Assn. of Japan General Denistry, Tokyo, Japan

Continuation of Ser. No. 851,703, Nov. 15, 1977, abandoned. This application Mar. 30, 1979, Ser. No. 25,466

Claims priority, application Japan, Jun. 2, 1977, 52-63941

Int. Cl.[2] G03B *41/16*

U.S. Cl. 250—416 TV **4 Claims**



1. An X-ray image diagnostic apparatus having a low X-ray radiation dosage level comprising:

an X-ray generating source for emitting radiation to expose an object;

an optical system having a fluorescent screen at an entrance thereof for receiving said emitted X-ray radiation;

an imaging device comprising a television camera tube having an image intensifier target and a high voltage supply and deflection synchronizing and blanking circuits coupled directly to said optical system for receiving an X-ray image from said fluorescent screen and forming a video signal image from said fluorescent screen image;

a television camera control unit for amplifying the output from said imaging device, said television camera control unit including a sequence circuit for controlling the supply of synchronizing signals to said camera tube;

an exposure time control circuit for controlling the exposure time of the X-ray radiation emitted from said X-ray generating source so that it is less than 1/100 second;

an image storing memory circuit connected to said television camera control unit for storing an image signal from said control unit; and,

a monitor circuit for displaying said image signal, said X-ray exposure time control circuit comprising:

a chattering preventing circuit for shaping an input signal to a rectangular pulse train wave form which serves as a time base wave,

a trigger flip-flop circuit for receiving said rectangular time base wave signal,

a differentiating circuit for receiving said rectangular time base wave signal and supplying an initiation signal to said sequence circuit,

a schmidt trigger circuit for changing a sinusoidal wave form from a power source to a rectangular trigger wave form,

a first decimal counter circuit having an input receiving said rectangular trigger wave form and a reset terminal connected to said trigger flip-flop circuit for supplying a frame blanking signal obtained at its output terminal to said sequence circuit,

a first delay flip-flop circuit having a reset terminal connected to output terminals of said schmidt trigger circuit, said first decimal counter circuit and said trigger flip-flop circuit,

a following reset flip-flop circuit connected to the output terminal of said first delay flip-flop circuit after a delay

corresponding to one pulse wave and for supplying a delayed output signal,

a first AND circuit for receiving the output signals of said reset flip-flop circuit and said schmidt trigger circuit,

a second decimal counter circuit for receiving the output signal from said first AND circuit,

a third decimal counter circuit for receiving the output signal from said second decimal counter circuit,

a second delay flip-flop circuit connected to the output of said schmidt trigger circuit for supplying an output signal forming a scanning starting signal supplied to said second and third decimal counters and said sequence circuit,

a LED display device connected to said second and third decimal counter circuits through a latching circuit for displaying an exposure time, and

an exposure time setting switching circuit connected to the outputs of said second and third decimal counter circuits for producing an exposure time setting switching signal and transferring it through second and third AND circuits to said X-ray tube so as to start X-ray emission.

4,210,813

IONIZING RADIATION GENERATOR

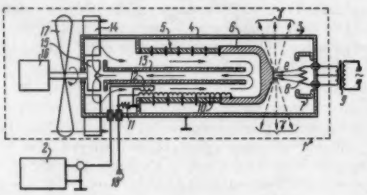
Vladimir F. Romanovsky, proezd Shokalskogo,4,korpus 1,kv.13; Vadim S. Panasjuk, 3 Schukinsky proezd,3,kv.80; Boris M. Stepanov, Leninsky prospekt,57,kv.34; Alexandr M. Ovcharov, Balaklavsky prospekt,4,korpus 2,kv.104, and Jury A. Akimov, Vladimirskaya ulitsa,4,kv. 10, all of Moscow, U.S.S.R.

Filed Nov. 16, 1978, Ser. No. 961,378

Claims priority, application U.S.S.R., Jan. 9, 1978, 2568767

Int. Cl.[2] H05G *1/10*

U.S. Cl. 250—421 **2 Claims**



1. An ionizing radiation generator comprising:

an ionizing radiation emitter including a resonance transformer and an accelerating tube;

a field winding and a step-up winding, having a low-voltage and high-voltage ends, of said resonance transformer, said field winding of said resonance transformer being arranged near said low-voltage end of said step-up winding;

an electrically conducting housing of said resonance transformer, electrically associated with said low-voltage end of said step-up winding;

a high-frequency oscillator electrically associated with said field winding;

a high-voltage electrode of said accelerating tube, connected to said high-voltage end of said step-up winding of said resonance transformer;

a tubular insulator of said accelerating tube, secured in said electrically conducting housing of said resonance transformer, said high-voltage electrode being attached to one end thereof;

an inner space of said tubular insulator, accommodating said step-up winding of said resonance transformer;

an evacuated inner space of said accelerating tube, confined between said electrically conducting housing of said resonance transformer and said tubular insulator;

a low-voltage electrode of said accelerating tube, arranged in said electrically conducting housing of said resonance transformer and electrically associated with said housing;

a source of charge particles of said accelerating tube, arranged in said evacuated space and electrically associated with one of said electrodes;

a coolant supplied into said inner space of said tubular insulator, to said step-up winding of said resonance transformer and to said high-voltage electrode of said accelerating tube.

4,210,814

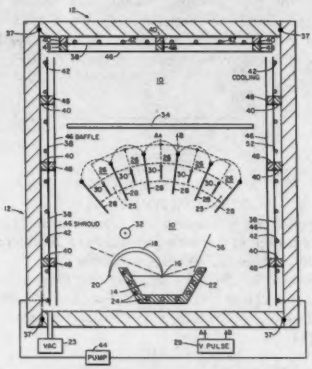
CONTROL OF PYROPHORICITY IN DEPOSITS PRODUCED BY ELECTRON BEAM EVAPORATION OF URANIUM

John C. Clifford, Richland, Wash., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jan. 9, 1978, Ser. No. 867,678

Int. Cl.[2] H01J *27/00*

U.S. Cl. 250—427 **19 Claims**



1. Apparatus for reducing the pyrophoricity of deposits of a material evaporated within a chamber comprising:

a sealed chamber defined by an enclosure;

means for providing within said chamber an atmosphere of generally non-reactive nature;

a reservoir of a material to be evaporated;

means for directing a vapor of said material from said reservoir into said chamber;

at least one surface within said chamber in the path of the directed vapor and on which at least portions of the vaporized material deposits;

means for cooling said enclosure to a temperature at which said vapor deposits at a relatively low pyrophoric density; and

means for maintaining a temperature for said collection surfaces higher than the enclosure temperature to promote deposition of said material at a relatively higher density.

4,210,815

X-RAY APPARATUS SERVO SYSTEM

Mark E. Riehl, Waukesha, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,274

Int. Cl.[2] G01N *21/34, 23/04*

U.S. Cl. 250—445 R **4 Claims**

1. In x-ray apparatus including an x-ray source device for projecting an x-ray beam from its focal spot, an x-ray receptor device spaced from said source to enable an examination subject to be disposed in the beam from the source to the receptor, means for mounting said source device and said receptor device, respectively, for angulation about their respective first and second axis, the angulation axis of one of said source device and said receptor device being stationary and the other of said source and said receptor devices and its angulation axis

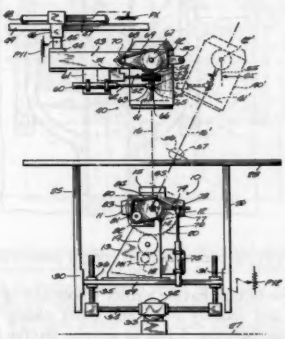
being translatable along a first line having a length designated as the x distance and constituting one side of a triangle, said first line being perpendicular to a second line extending between said axes and having a length designated as the y distance and constituting another side of said triangle, a line extending between the axis of the untranslated device and the axis of the translated device constituting the hypotenuse of said triangle and defining with said second line an angle designated as θ, and first and second servo systems including motor means operative to angulate said source and said receptor, respectively,

each of said servo systems including control means having input means for an error signal and having output means supplying driving power to the servo motors for angulating said devices in response to error signals,

respective means for developing first signals each corresponding with the varying instantaneous values of the tangents of the angles (in radians) in which said devices are angulated during operation of said motor means and during concurrent angulation of said image receptor and said x-ray source means while an error signal exists,

means for developing x distance and y distance related signals proportional, respectively, to the said x and y distances which define the position to which one device has been translated,

means for dividing said signal proportional to the x distance by the signal proportional to the y distance to produce a



servo system command signal proportional to the tangent of θ,

means for producing respective angulation error signals for said receptor and said source representing the differences between said command signal corresponding with tangent of θ resulting from division and each of said instantaneous varying signals corresponding with the tangents of the angulation angles in radians, said servo motors operating until being interrupted in response to nulling of said error signals,

individual means either of which is responsive to the existence of one error signal by preventing energization of said x-ray source,

means for producing a signal corresponding directly with the value of the angle to which said x-ray source has been angulated at any instant during angulation following translation of said one of said image receptor and x-ray source,

means for producing an error signal representative of the difference between said signal corresponding with said instantaneous angulation and the command signal corresponding with the tangent of θ,

means responsive to the existence of said last named error signal by preventing energization of said x-ray source,

means for producing a signal corresponding directly with the value of the angle to which said receptor has been angulated at any instant following translation of one of said image receptor and said source,

means for producing an error signal representative of the difference between said last named signal and the command signal corresponding with the tangent of θ, and

means responsive to existence of said last named error signal by preventing energization of said x-ray source.

4,210,816

APPARATUS FOR UNLOADING RADIOGRAPHIC CASSETTES IN DAYLIGHT

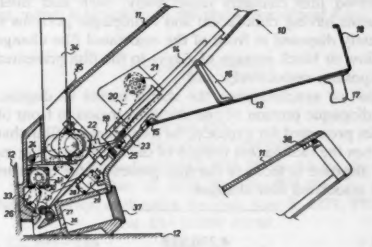
Emile F. Stievenart, Hoboken; Hendrik S. Plessers, Boechout, and Georges J. Neujens, Merksem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 742,636, Nov. 17, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,628

Claims priority, application United Kingdom, Nov. 20, 1975, 47807/75

Int. Cl.[2] G11B 1/00

U.S. Cl. 250—468 **7 Claims**

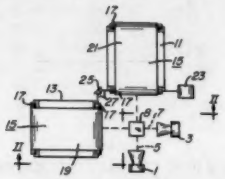


1. An apparatus for automatically unfastening and opening radiographic film cassettes of the type having a container body for holding a sheet of said film and including bottom and side walls, a lid hinged to one side wall of said body and unlatchable latching means for securing said lid in closed position on said body, said apparatus comprising a housing having an access opening in one wall thereof for the introduction and removal of one of said cassettes into and from the housing interior and including an openable closure for said opening, said housing being substantially light-tight when said closure is closed; a first switch means activated in response to closure of said closure means; means within said housing adjacent said opening for supporting a cassette in a downwardly inclined position with its bottom side up and its hinged end elevated above its opposite end at an angle sufficient to cause the film sheet to slide upon said lid under the action of gravity when the cassette body is clear of said lid, a second switch means associated with said supporting means and activated in response to the presence thereon of a cassette in correctly oriented condition; a cyclically operative cassette unlatching and opening mechanism including a motor drive means for cyclically operating said mechanism when energized and being energized in response to activation of both said switch means, means for engaging said cassette latch and unlatching the same, and means for thereafter engaging a wall of the body of said cassette at a point spaced from the hinge of the latter and for elevating the end of said body remote from said hinge clear from said lid to permit said film sheet to slide along said lid out of said cassette under the force of gravity, and means for receiving the thus released radiographic film.

4,210,817
APPARATUS FOR ELIMINATING CROSS-FOGGING IN BIPLANE RADIOGRAPHY

Joseph A. Horton, 4817 Trinity Pl., Philadelphia, Pa. 19143

Filed Jan. 9, 1979, Ser. No. 2,199
Int. Cl.[2] G21G 11/00
U.S. Cl. 250—515 5 Claims



1. An apparatus for practicing biplane radiography comprising first and second X-ray emitters arranged to direct x-rays through a common object along intersecting planes and first and second film changers for sequentially presenting film for exposure by x-rays generated by said first and second x-ray emitters respectively, the improvement for eliminating cross-fogging comprising:

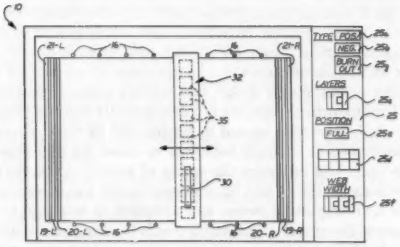
first and second shielding means associated with the first and second film changers respectively, each said shielding means having radiolucent and radiopaque portions alternately disposed in front of the associated film changer to allow or block passage of x-rays to the film presented for exposure, respectively; and

means for synchronizing the shield means to dispose the radiopaque portion of one shielding means in front of the film presented for exposure by its associated film changer when the radiolucent portion of the other shielding means is disposed in front of the film presented for exposure by its associated film changer.

4,210,818
APPARATUS FOR DETERMINING IMAGE AREAS FOR PRINTING

Barry P. Green, Waterford, Conn., and Francis J. Sciulli, Palm Bay, Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Jun. 7, 1978, Ser. No. 913,519
Int. Cl.[2] G01N 21/30
U.S. Cl. 250—559 9 Claims

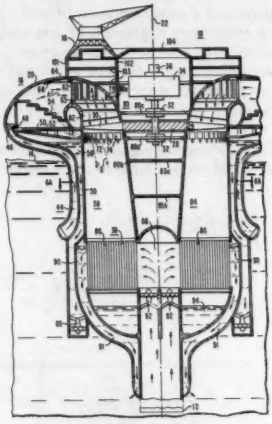


1. Apparatus for determining the relative image area in each column of an image member divided into ink key columns corresponding to those in which ink is controlled in a printing cylinder comprising support means divisible into ink key columns for supporting said image member at positions thereon corresponding to the column positions on said printing cylinder at which the image on said image member is to be printed, light source means for directing light on said columns of said support means, means for sensing light from said columns and providing signals indicating the amount of light received, means for providing information as to areas of said image member containing information to be printed, and means for utilizing said area information for storing data from said signals only from columns of said support means in said areas to be printed.

4,210,819
OPEN CYCLE OCEAN THERMAL ENERGY CONVERSION STEAM CONTROL AND BYPASS SYSTEM

J. Michael Wittig, West Goshen, and Stephen J. Jennings, Radnor Township, Delaware County, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,574
Int. Cl.[2] F03G 7/04
U.S. Cl. 290—52 7 Claims



1. An open cycle ocean thermal energy conversion system comprising:

an axial flow turbine having a rotor whose axis of rotation is vertical and radially inner and outer casing structures which therebetween define an annular motive fluid path, said rotor including an annular array of radial blades extending across said fluid path;

a condenser in fluid communication with said annular motive fluid flow path for condensing the motive fluid expanded through the turbine blades;

a flash evaporator disposed about the turbine's axis of rotation, said evaporator having a generally toroidal-shaped casing, the interior of said casing being in fluid communication with said condenser both through and in bypassing relationship with said turbine blades;

first means for regulating motive fluid flow from said evaporator to said condenser through said turbine blades; and

second means for regulating bypass motive fluid flow from said evaporator to said condenser.

4,210,820
OPEN CYCLE OCEAN THERMAL ENERGY CONVERSION SYSTEM STRUCTURE

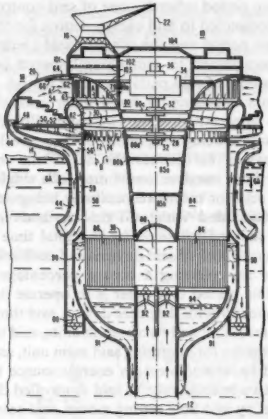
J. Michael Wittig, West Goshen, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 17, 1978, Ser. No. 934,575
Int. Cl.[2] F03G 7/04
U.S. Cl. 290—52 22 Claims

1. An open cycle, ocean thermal energy conversion system comprising:

an axial flow turbine having a substantially vertical rotatable shaft about which at least one axial row of radial blades is disposed, an annular steam inlet structure through which motive steam is supplied to said turbine blades, and a steam outlet structure through which motive steam is exhausted after expansion through said blades;

a flash evaporator disposed about the turbine's shaft, said evaporator having a generally toroidal-shaped casing, an inlet opening in a radially outer portion of said casing through which relatively warm ocean water is received, a portion of said warm ocean water being flashed into steam and transmitted through said turbine steam inlet structure, the unflashed warm ocean water being drained from said evaporator casing through a drain outlet disposed in a radially inner portion of said casing, said water assuming a substantially radial flow direction from the inlet to the outlet;



a substantially annular condenser disposed axially adjacent said turbine about said turbine's axis of rotation, said condenser including radially inner and outer tube sheets, a plurality of tubes extending therebetween, a condensate sump disposed under said tubes for collection of condensed motive steam, and an outlet manifold, said inner tube sheets and said steam outlet structure cooperating to form an inlet manifold for distributing relatively cold ocean cooling water to the tubes, said cooling water traversing the tubes and exiting therefrom into the outlet manifold disposed radially adjacent said outer tube sheets;

a generator driven by said turbine for producing electrical energy;

first propulsion means for circulating relatively warm ocean water through said evaporator's inlet opening and drain outlet; and

second propulsion means for circulating the cooling water through said condenser's inlet and outlet manifolds.

4,210,821

APPARATUS FOR EXTRACTING ENERGY FROM MOVEMENT OF WATER

Christopher Cockerell, Southampton, England, assignor to Wavepower Limited, Southampton, England

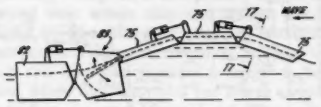
Filed Mar. 21, 1977, Ser. No. 779,705

Claims priority, application United Kingdom, Mar. 31, 1976, 13039/76

Int. Cl.² F03B *13/00*

U.S. Cl. 290—53 **23 Claims**

1. Apparatus for converting into useful energy movement imparted thereto by movement of water, comprising at least two interconnected buoyant members each having a substantially continuous surface which contacts the water so that in use of the apparatus said members move relative to each other about the interconnection due to vertical motions of the water, means for converting said relative movements of the interconnected members into useful energy, at least one of said members being provided with a member which in use of the apparatus is movable relative thereto in response to horizontal motions of the water, and means for converting the movement of said member into useful energy, said apparatus in use floating on the surface of the water and being free from any vertical



reaction forces between itself and any member supported from the bed of the water, said means responsive to horizontal motions comprising a flap member located for movement within a duct provided in the associated one of said members and movable by water flowing into and out of the duct due to surge motion of the water, said flap member being operatively connected to means for converting its movement into useful energy, said flap being pivotally connected to the associated one of said members, and each duct having a curved wall whose radius is struck from the pivot axis of said flap.

4,210,822

TOUCH CONTROL SWITCH

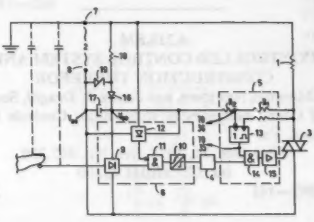
Lars A. Wern, Upplandsgatan 65, 113 28 Stockholm, Sweden

Filed Mar. 13, 1978, Ser. No. 885,806

Claims priority, application Sweden, Aug. 5, 1977, 7708952

Int. Cl.² H03K *17/68*

U.S. Cl. 307—116 **3 Claims**

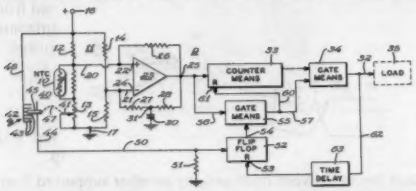


1. Touch control switch suitable for connection between a lamp load and a supply circuit in a lighting installation for alternating current and comprising a semiconductor switching element with a gate electrode, a counting circuit with a forward stepping input and a digital control output connected to the gate electrode of the semiconductor switching element via a trigger pulse generating circuit for controlling the conduction of the semiconductor switching element in dependence on the condition of activation of the digital control output, and a control pulse shaping circuit having an output connected to the forward stepping input of the counting circuit and a first and second input terminal for connection to a first and second, respectively terminal of the supply circuit via a touch sensitive impedance, characterized in that the trigger pulse generating circuit comprises an edge-triggered mono-pulse generating circuit that has a first input for leading edge triggering and a second input for trailing edge triggering jointly connected to the supply circuit.

4,210,823
CONDITION CONTROL SYSTEM WITH SPECIAL SET POINT MEANS

John L. Kabat, Bloomington, and Marvin D. Nelson, St. Louis Park, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 15, 1978, Ser. No. 905,704
Int. Cl.[2] G05B *13/00*
U.S. Cl. 307—117 10 Claims

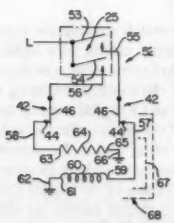


1. Means for sensing a change in a set point of a condition control system, including: condition control system means responsive to a sensed condition and including condition control set point means; said condition control system means having a switched output upon said system means sensing a condition within a proportional band of said system; said condition control system means having a constant output upon said system means sensing a condition outside of said proportional band; said set point means including pulse generating means activated by movement of said set point means; and pulse responsive circuit means responsive to said pulse generating means and connected to an intermediate portion of said condition control system means; said pulse generating means activating said intermediate portion of said condition control system whenever said set point means is moved to cause the set point of said system means to have a value outside of said proportional band of said system; said pulse responsive circuit means responding to the change of said set point means to cause said intermediate portion of said condition control system means to adjust said switched output to correspond with said set point means.

4,210,824
TIMER CONTROLLED CONTROL SYSTEM AND TIMER CONSTRUCTION THEREFOR

Edgar E. Marquis, Newtown, and James A. Draghi, Southington, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 31, 1977, Ser. No. 847,330
Int. Cl.[2] H01H *43/00*
U.S. Cl. 307—141 10 Claims



1. In a timer controlled control system for an apparatus having two controlled devices and a timer construction operatively associated with said devices to operate the same, the improvement wherein said timer construction comprises a single timer having a pair of selector means respectively operatively associated with said devices and each selector means being adapted for selecting the total timer period said timer is to operate both of said devices and each selector means being adapted for selecting a certain percentage of said selected total time period said timer is to operate its respective device concurrently with the other device, said system having an energy source, said timer construction having a main unit and two branch units, said timer having a time setting means for operating said main unit, said main unit being adapted to interconnect said energy source respectively through said two branch units to said controlled devices for a time period set by said time setting means, said pair of selector means being respectively and operatively interconnected to said time setting means so that either selector means can set said time setting means for said particular time period, and means respectively and operatively interconnecting said pair of selector means to said branch units so that either selector means can set its respective branch unit to interconnect said energy source to its respective controlled device for only said certain percentage of said particular time period whereby one of said controlled devices will be interconnected to said energy source for the entire said particular time period and the other of said controlled device will be interconnected to said energy source only for said certain percentage of said particular time period.

6. In a timer construction for a timer controlled control system of an apparatus having two controlled devices, said timer construction being adapted to be operatively associated with said devices to operate the same, the improvement wherein said timer construction comprises a single timer having a pair of selector means respectively being adapted to be operatively associated with said devices and each selector means being adapted for selecting the total time period said timer is to operate both of said devices and each selector means being adapted for selecting a certain percentage of said selected total time period said timer is to operate its respective device concurrently with the other device, said timer construction having a main unit and two branch units, said timer having a time setting means for operating said main unit, said main unit being adapted to interconnect an energy source respectively through said two branch units to said controlled devices for a time period set by said time setting means, said pair of selector means being respectively and operatively interconnected to said time setting means so that either selector means can set said time setting means for said particular time period, and means respectively and operatively interconnecting said pair of selector means to said branch units so that either selector means can set its respective branch unit to interconnect said energy source to its respective controlled device for only said certain percentage of said particular time period whereby one of said controlled devices will be interconnected to said energy source for the entire said particular time period and the other of said controlled devices will be interconnected to said energy source only for said certain percentage of said particular time period.

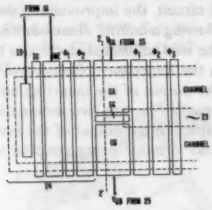
4,210,825
LINEAR DIFFERENTIAL CHARGE SPLITTING INPUT FOR CHARGE COUPLED DEVICES

Ronald E. Crochiere, Berkeley Heights, N.J.; Carlo H. Sequin, Berkeley, Calif., and Michael F. Tompsett, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 748,485, Dec. 8, 1976. This application May 12, 1978, Ser. No. 905,169
Int. Cl.[2] G11C *19/28;* H01L *29/78*
U.S. Cl. 307—221 D 6 Claims

1. A charge transfer device comprising a layer of semiconductor material in which first charge packets can be moved along a first path from an input portion in response to a succession of localized electric fields, and electrical conductor means including a first set of electrodes coupled to said layer for generating said fields in a manner to move said first charge packets along said first path, wherein said input portion includes means for generating signal independent charge packets, said means comprising a second electrode coupled to said

layer and an input diode along with clock means for applying clock pulses to said second electrode and said input diode, and input means comprising first and second input gate electrodes and an input signal source for applying to said first and second



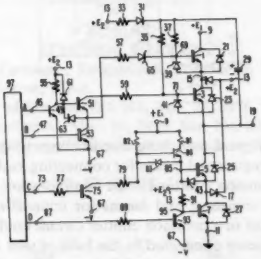
gate electrodes information input signals for dividing each of said signal independent charge packets into first and second charge packets, each of said first charge packets being linearly related to said information input signals, said first charge packet being positioned for movement along said first path.

4,210,826

SWITCHING CIRCUIT

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 21, 1978, Ser. No. 944,633
Int. Cl.[2] H03K *17/00*
U.S. Cl. 307—254 **15 Claims**



1. A bipolar nonlinear switching amplifier, comprising:

first through fourth like conductivity transistor switch means connected sequentially in cascode, each having a base, collector, and emitter electrodes, said base electrodes being receptive of first through fourth control signals, respectively, an operating voltage E_1 being applied to one end of said cascode combination, a source of reference voltage being applied to the other end of said cascode combination;

a primary output terminal connected to the common connection of said second and third transistor switch means;

first diode means connected between the common connection of said first and second switch means and a first source of bias voltage having a voltage level of E_2 volts and the same polarity as said operating voltage, said first diode means being polarized for providing in combination with said second transistor switch means a gated current path, for selectively passing current in one direction between said source of bias voltage and said output terminal; and

second diode means connected between said source of bias voltage and the common connection of said third and fourth switch means, said second diode means being polarized in the opposite direction as said first diode means, for providing in combination with said third transistor switch means a gated current path for selectively passing current in the opposite direction between said source of bias voltage and said output terminal;

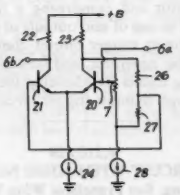
the difference in voltage between said operating voltage E_1 and bias voltage E_2 being less than the V_{CEX}, the breakdown voltage from collector to emitter with some backbias voltage applied to the base electrode of each one of said first through fourth transistor switch means, whereby the combination of said first through fourth transistor switch means are operable to a first state where said first and second switch means are turned on and said third and fourth switch means turned off, for applying said operating voltage E_1 to said primary output terminal, to a second state where only said second switch means is turned on, to a third state where all of said first through fourth switch means are turned off, to a fourth state where only said third switch means is turned on, and to a fifth state where only said third and fourth switch means are turned on for applying said reference voltage to said primary output terminal, the combination of said first through fourth transistor switches being operable from any one to another of said first through fifth states, for permitting switching of said operating voltage E_1 having a value substantially greater than the V_{CEX} rating of each one of said first through fourth transistor switch means, and also being operable from either one of said second, third and fourth states directly to a sixth state in which only said second and third transistor switch means are turned on for providing bidirectional current flow between said source of bias voltage and said output terminal.

4,210,827

CONTROL CIRCUIT FOR GENERATING A STEP-TYPE CONTROL SIGNAL AND A CONTINUOUSLY VARYING CONTROL SIGNAL WHOSE AMPLITUDE CHARACTERISTIC REPEATS AT THE STEP TRANSITION

Kenichi Kanazawa, Atsugi, and Yukio Tanaka, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1978, Ser. No. 932,618
Claims priority, application Japan, Aug. 11, 1977, 52-96480
Int. Cl.[2] H03K *1/14*
U.S. Cl. 307—264 **9 Claims**



1. A control circuit for use with an adjustable resistance to generate a first control signal whose amplitude is a function of the setting of said resistance and to generate a second control signal whose level is changed over from a first level to a second level at a predetermined setting of said resistance, said control circuit comprising a pair of transistor means each having base, emitter and collector electrodes, the emitter electrodes of said pair of transistor means being coupled in common to a reference potential; an adjustable resistance coupled to the collector electrode of one of said pair of transistor means and having an adjustable output tap from which said first control signal is derived; impedance means coupled to the collector electrode of said one of said pair of transistor means; a current source connected in common to said adjustable resistance and to said impedance means such that each of said adjustable resistance and said impedance means is coupled between said collector electrode and said current source;

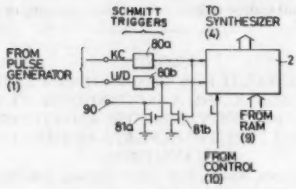
means for connecting said adjustable output tap of said adjustable resistance to the base electrode of said one of said pair of transistor means; means for connecting an output of said impedance means to the base electrode of said other of said pair of transistor means; and means for deriving said second control signal from the collector electrode of said other of said pair of transistor means, such that as the setting of said adjustable output tap changes, the voltage applied to the base electrode of said one of said pair of transistor means, as well as said first control signal, correspondingly changes from a first amplitude toward a second amplitude until said predetermined setting is reached, whereupon the relative conductivities of said pair of transistor means is reversed and said first control signal changes back to said first amplitude.

4,210,828

DEVICE FOR IMPROVING OUTPUT WAVEFORM OF MANUALLY CONTROLLABLE PULSE GENERATOR FOR USE IN PRESET ELECTRONIC TUNING CONTROL DEVICE

Saburo Takaoka, and Youichiro Tsuda, both of Tokarozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 2, 1978, Ser. No. 912,143
Claims priority, application Japan, Jun. 3, 1977, 52-66067
Int. Cl.² H03K 5/153
U.S. Cl. 307—268 **3 Claims**



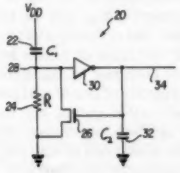
1. In a preset type electronic tuning control device having a manually operable pulse generator and an up/down counter having inputs connected to at least two outputs of said pulse generator, a device for improving the output waveforms of said pulse generator and comprising a first Schmitt trigger circuit connected to one of said outputs of said pulse generator and a second Schmitt trigger circuit connected to the other output of said pulse generator, and further comprising threshold level checking means for checking the threshold levels of said first and second Schmitt trigger circuits.

4,210,829

POWER UP CIRCUIT WITH HIGH NOISE IMMUNITY

Thomas S. W. Wong, San Francisco; Wing Y. Wong, and Edwin M. W. Chow, both of Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 2, 1978, Ser. No. 947,521
Int. Cl.² H03K 17/60, 5/08
U.S. Cl. 307—296 R **8 Claims**



1. In a power up circuit for resetting an associated digital circuit upon the application of a power supply potential to the digital circuit which includes a series connection of a capacitor and an impedance which is connected between the power supply potential and a reference potential and an inverting amplifier having an input coupled to the node of the capacitor and the impedance and an output which is coupled to a reset line of the digital circuit, the improvement comprising:

(a) a transistor having a control electrode and two additional electrodes, the two additional electrodes being coupled in parallel with the impedance, the control electrode being coupled to the output of the inverting amplifier; and

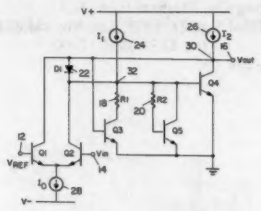
(b) a second capacitor having two terminals, the first terminal being coupled to the output of the inverting amplifier and the second terminal being coupled to the reference potential.

4,210,830

HIGH SPEED SWITCHING CIRCUIT

Kiyoshi Fukahori, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Aug. 28, 1978, Ser. No. 937,510
Int. Cl.² H03K 5/153
U.S. Cl. 307—362 **21 Claims**



1. A high speed switching circuit comprising:

a first transistor and means for connecting said first transistor in a common emitter circuit configuration;

a second transistor and means for connecting said second transistor in a common emitter circuit configuration with its collector connected to the base of said first transistor;

resistance means connected between the collector of said first transistor and the base of said second transistor;

first means for supplying a substantially constant predetermined current to a first circuit node interconnecting said resistance means and the base of said second transistor, the product of said predetermined current and the resistance of said resistance means being greater than the base-to-emitter voltage drop of said second transistor when it is turned on;

second means for supplying a substantially constant current to a second circuit node interconnecting the base of said first transistor and the collector of said second transistor; and

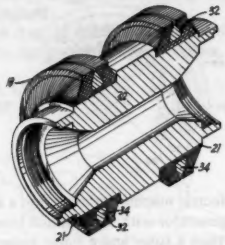
means for selectively steering the flow of current from said first current supplying means away from said first circuit node and from the base of the second transistor, whereby said first transistor is turned on by flow of current into its base from said second current supplying means, and said second transistor is turned off; and for selectively restoring the flow of current from said first current supplying means first through said resistance means into the collector of the first transistor whereby the base voltage of said second transistor is increased, and the base voltage of said first transistor is then decreased as the collector of said second transistor approaches ground to rapidly change the states of said first and second transistors.

4,210,831

INVOLUTE LAMINATION ARMATURE FOR A LINEAR RECIPROCATING MOTOR

Ralph Hurst, Clifton Park, N.Y., assignor to Exxon Enterprises, Inc., New York, N.Y.

Filed Jan. 2, 1979, Ser. No. 143
Int. Cl.² H02K *41/02*
U.S. Cl. 310—13 **16 Claims**



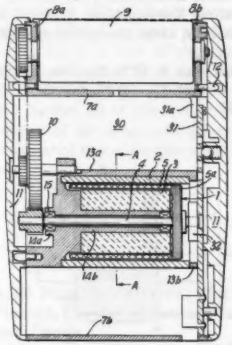
1. An improved armature for a linear motor comprising a generally cylindrical core of homogeneous nonlaminate ferromagnetic material and at least one annular ring of involute laminations surrounding said core and secured thereto each said lamination being in the form of an involute and extending radially from and axially along said core to provide an essentially solid cylindrical armature having an outer region of laminate construction.

4,210,832

ELECTRIC SHAVERS

Enzo Ascoli, Lausanne, Switzerland, assignor to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 681,769, Apr. 29, 1976, abandoned. This application Mar. 14, 1978, Ser. No. 886,482
Claims priority, application United Kingdom, May 2, 1975, 18361/75
Int. Cl.² H02K *7/14*
U.S. Cl. 310—50 **14 Claims**



1. In an electric shaver comprising a housing, a cutting head, electric motor having a stator including a hollow cylinder of magnetizable material and a rotor mounted for rotation within the stator cylinder, and electric circuit means for supplying energizing current to the motor, the improvement comprising:

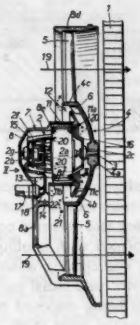
the stator having two flat parallel opposed faces and the housing being moulded in situ around the hollow stator cylinder with an external surface of the housing formed flush with the flat faces of the stator so as to be contiguous with the stator from end to end to secure and locate the stator cylinder in position and to serve as a reference member for mounting of the cutting head, electric motor and electric circuit means.

4,210,833

MOTOR-FAN UNIT WITH COOLED MOTOR

Rene R. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 6, 1977, Ser. No. 858,062
Claims priority, application France, Dec. 13, 1976, 76 37451
Int. Cl.² H02K *9/00*
U.S. Cl. 310—58 **2 Claims**



1. In a motor-fan unit for an automobile engine cooling system, said unit comprising an electric motor, a rotary helicoid fan driven by said electric motor, a rotary centrifugal blading fitted in a central area of said helicoid fan and driven in conjunction therewith by said electric motor, and means whereby the air sucked by said centrifugal blading is caused to flow over said electrical motor and cool the same, the combination comprising:

(a) an inner housing surrounding said electric motor and having at least one lateral air inlet,

(b) an outer shroud surrounding said helicoid fan,

(c) at least one arm bracing said outer shroud to said inner housing and extending generally radially opposite said lateral air inlet, and

(d) said arm including a generally U-shaped cavity having its concavity opening in the direction of the air flow that is circulated by said helicoid fan,

(e) said cavity being effective to cause air sucked into said cavity through said lateral air inlet to move along a tortuous path.

4,210,834

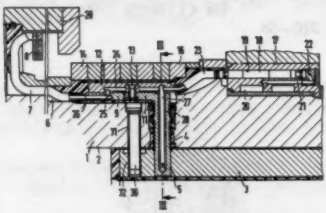
DEVICE FOR COOLING AND ELECTRICALLY CONNECTING FIELD-CURRENT LINES TO WATER-COOLED TURBOGENERATOR ROTORS

Erich Weghaupt, and Gerhard Krieger, both of Mülheim, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,187
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723202
Int. Cl.² H02K *1/32*
U.S. Cl. 310—61 **7 Claims**

1. In a water-cooled turbogenerator rotor mounted on a rotor shaft and having water-cooled end turn leads surrounded by a rotor end-bell and further having radial current-contact pins contacting ends of exciter current lines disposed in the rotor shaft, the pins being cooled by cooling water fed thereto through high-pressure insulating hoses axially connected to cooling water distribution, chambers provided on the rotor shaft, the pins being connectible at radially outer ends thereof to the water-cooled end turn leads disposed in slots formed on

the rotor shaft and to the high-pressure insulating hoses, a device for cooling and electrically connecting the exciter current lines comprising respective widened contact straps formed at respective ends of the end turn leads extending out from the rotor end-bell and at the respective radially outer ends of the current-contact pins, said widened contact straps of said end turn leads and said current-contact pins being received in a slot formed in the surface of the rotor shaft and being in



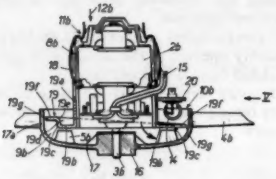
mutually abutting relationship, and a connecting strap overlying said widened contact straps and electrically, hydraulically and mechanically connecting said widened contact straps, said connecting straps being formed with cooling-water channels and means for connecting said cooling-water channels to the high-pressure insulating hoses, said radial current-contact pins and said connecting straps being disposed beyond the rotor end-ball in axial direction of the rotor shaft.

4,210,835

FAN WITH A COOLED MOTOR

Rene R. Neveux, Les Clayes-sous-Bois, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 6, 1977, Ser. No. 858,061
Claims priority, application France, Dec. 13, 1976, 76 37449
Int. Cl.[2] H02K *9/06*
U.S. Cl. 310—62 **4 Claims**



1. In a motor-fan unit for an automobile engine cooling system, said unit including an electric motor having an energizing circuit, and a rotary helicoid fan driven by said electric motor, the combination comprising:

(a) a rotary centrifugal blading fitted in a central area of said helicoid fan and driven in conjunction therewith by said electric motor to impel air,

(b) means whereby the air impelled by said centrifugal blading is caused to flow over said electric motor and cool the same,

(c) a volute fixed with respect to said unit and extending around the rotary centrifugal blading and being effective to receive the air impelled by the blading,

(d) air outlet means on said helicoid fan which is adjacent to the electric motor,

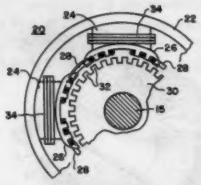
(e) said outlet means being effective to discharge said air received by said volute out of said volute at said helicoid fan side.

4,210,836

PERMANENT MAGNET GENERATOR

Carroll C. Kouba, Fort Shawnee, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 10, 1978, Ser. No. 894,879
Int. Cl.[2] H02K *19/12*
U.S. Cl. 310—112 **4 Claims**



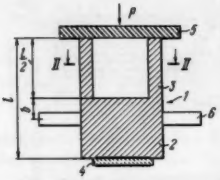
1. A dynamoelectric machine comprising: a main generator and an auxiliary generator within a common housing; said main generator comprising a rotor and a stator respectively including field and armature windings that produce magnetic fields; said auxiliary generator comprising a rotor mounted for rotation on a common shaft with said rotor of said main generator and a stator including a plurality of radially disposed permanent magnet pole members with a pole face portion of magnetic material at the inner extremity of each pole member, said pole members connected into a magnetic circuit at their outer periphery, and an output winding located in said pole face portions; the magnetic circuit of said auxiliary generator stator being located within said magnetic fields produced by said main generator windings; and a short-circuited conducting means encircling each of said auxiliary generator pole members for minimizing the effects of said magnetic fields on said magnetic circuit of said auxiliary generator.

4,210,837

PIEZOELECTRICALLY DRIVEN TORSIONAL VIBRATION MOTOR

Petr E. Vasiliev, ulitsa Ugnyagyasju, 9, kv. 17, Vilnjus; Kazimiras M. Ragulskis, ulitsa Donelaichio, 17, kv. 20, Kaunas; Ionas A. Savitskas, ulitsa Kauno, 25, kv. 104, Vilnjus; Vitaly M. Misikov, ulitsa Karolinishkju, 13, kv. 226, Vilnjus, and Oleg D. Topolnitsky, ulitsa Dzerzhinskogo, 130, kv. 47, Vilnjus, all of U.S.S.R.

Filed Mar. 8, 1979, Ser. No. 18,594
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—323 **10 Claims**



1. A vibration motor comprising: a concentrator of torsional vibrations; a cylinder-shaped first stage of said concentrator; a cylinder-shaped second stage of said concentrator, having a cross-sectional area smaller than that of said first stage and rigidly coupled with said first stage; a piezoelectric cell contacting said first stage; a rotor contacting said second stage; rods provided on a side surface of said first stage in a plane normal to the axis of said concentrator; said rods being inclined each at an acute angle to a tangent at a point where said rod is attached to a line of intersection of the side surface of said first

stage with said plane of location of the rods; said rods serving as resonators of torsional vibrations propagating therein.

4,210,838

GAS DISCHARGE DISPLAY PANEL

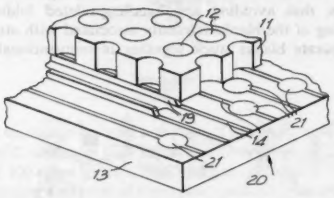
Frank Walters, Bury, England, assignor to Ferranti Limited, Hollinwood, England

Filed Aug. 14, 1978, Ser. No. 933,570

Claims priority, application United Kingdom, Aug. 25, 1977, 35726/77

Int. Cl.[2] H01J *61/04, 61/30, 61/54*

U.S. Cl. 313—198 **7 Claims**



1. A gas discharge display panel including a block of electrically insulating material containing a plurality of gas filled cavities forming display cells arranged in a two-coordinate array, each line of cavities including a priming cell containing a discharge for providing ultraviolet radiation to effect priming of adjacent display cells, a first end plate attached to the block to seal off one end of each of said cavities, the plate carrying on one face thereof adjacent the block a set of conductors extending along one coordinate of the array and associated one each with lines of cavities to form electrodes of discharge cells contained in said cavities, the conductors having thickened parts extending across the ends of the cavities of display cells to space the end plate from the block so that the parts of the conductors associated with the cavities of the priming cells are spaced from the ends of the cavities enabling radiation from a priming cell discharge extending into the space to illuminate the sides of adjacent conductors, a second plate attached to the block to seal off the other ends of the cavities and carrying on one face thereof adjacent the block a plurality of further electrodes corresponding to other ends of the cavities, and a further set of conductors extending along the other co-ordinate of the array associated one each with lines of cavities connected to said further electrodes by way of resistive elements.

4,210,839

MERCURY LAMP FOR PROMOTING PLANT GROWTH

Dieter Hagen, Pincourt, Canada, assignor to Westron of Canada Limited, Dorval, Canada

Filed Mar. 13, 1978, Ser. No. 886,040

Int. Cl.[2] H01J *17/08, 1/14, 1/30*

U.S. Cl. 313—218 **14 Claims**

1. A mercury lamp having a spectral output which promotes plant growth and having electrodes therein with an emission coating material on said electrodes, characterized by said coating material including the mineral scheelite, the promotion of plant growth by said spectral output exceeding the promotion of plant growth by the spectral output of an identical lamp whose emission coating material does not include the mineral scheelite.

4,210,840

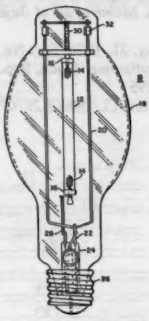
HID LAMP EMISSION MATERIAL

Ranbir S. Bhalla, Montville Township, Morris County, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1978, Ser. No. 968,709

Int. Cl.[2] H01J *1/14, 61/073*

U.S. Cl. 313—218 **8 Claims**



1. In combination with a high-intensity vapor discharge lamp comprising a radiation transmitting arc tube having electrodes operatively supported therein proximate the ends thereof and adapted to have an elongated arc discharge maintained therebetween, and means for connecting said electrodes to an energizing power source; the improved emission material dispersed in said electrodes, said improved electron emission material comprising a reacted mixture of barium zirconate ($BaZrO_3$) plus strontium zirconate ($SrZrO_3$) in a ratio of from 9:1 to 1:1.

4,210,841

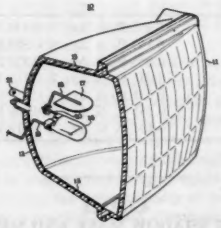
ALL PLASTIC HEADLAMP

Vincent Vodicka, South Euclid, Ohio, and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 17, 1978, Ser. No. 896,707

Int. Cl.[2] H01J *61/30*

U.S. Cl. 313—221 **10 Claims**



1. In a sealed, long life headlamp having a transparent plastic lens, a plastic reflector having a specular coating thereon, and at least one filament, the improvement comprising:

a sealed inner bulb enclosing said at least one filament with lead wires therefor, sealed through said reflector, and with said filament operating at a sufficient wattage and lumen output for the principal forward lighting source for a motor vehicle;

said lens and reflector characterized by a heat distortion temperature in excess of 130° Celsius; and

said lens and reflector being sealed together to define an enclosed volume and said filament having a wattage such

that the loading of said headlamp in watts per cc. is from 0.045–0.078 inclusive.

4,210,842

COLOR PICTURE TUBE WITH SHADOW MASK

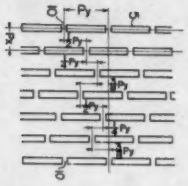
Takeshi Nakayama, Tokyo; Takehiko Nishimoto, Kodaira; Machio Kawashima, Mobara; Kozi Takahashi, Mobara, and Kuniharu Osakabe, Mobara, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 31, 1976, Ser. No. 719,154

Claims priority, application Japan, Sep. 10, 1975, 50-108989; Apr. 14, 1976, 51-41295

Int. Cl.² H01J *29/07*

U.S. Cl. 313—403 **5 Claims**



1. A color picture tube having a shadow mask which is provided with a plurality of aperture rows juxtaposed to one another, said aperture row extending in perpendicular to a scanning line and comprising a plurality of electron beam transmissive apertures aligned with a predetermined pitch P_y, wherein there exists between positional deviation Δy of said apertures relative to those in the adjacent aperture rows and said pitch P_y the following relation:

$$\frac{(k-0.35)}{2n} P_y \leqq \Delta y \leqq \frac{(k+0.35)}{2n} P_y$$

in which n is a positive integer at least among 1, 2, 3 and 4, and k is a positive odd number smaller than 2n, and wherein said plurality of aperture rows include at last two different rows of different deviation Δy, wherein said shadow mask includes a combination of three varieties of aperture rows having different deviations Δy_1, Δy_2 and Δy_3 which are set in a range

	$0.465\ P_y \leqq \Delta y_1 \leqq 0.535\ P_y$
	$0.163\ P_y \leqq \Delta y_2 \leqq 0.338\ P_y$
or	$0.663\ P_y \leqq \Delta y_2 \leqq 0.837\ P_y$
	$0.081\ P_y \leqq \Delta y_3 \leqq 0.169\ P_y$
or	$0.331\ P_y \leqq \Delta y_3 \leqq 0.418\ P_y$
or	$0.581\ P_y \leqq \Delta y_3 \leqq 0.668\ P_y$
or	$0.831\ P_y \leqq \Delta y_3 \leqq 0.918\ P_y$

4,210,843

COLOR CRT SHADOW MASK AND METHOD OF MAKING SAME

Subramanya Avadani, Elmhurst, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 3, 1979, Ser. No. 26,494

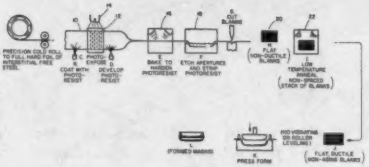
Int. Cl.² H01J *9/02*

U.S. Cl. 313—403 **9 Claims**

1. An improved method of making a color CRT shadow mask composed of a very thin steel foil material and having a pattern of apertures therein, such mask being highly susceptible to denting, creasing, scratching, tearing and other unacceptable handling-related mechanical defects attributable in large part to the fragility of the mask, the improved method resulting in significantly reduced looses from such handling-related mechanical defects and thus effecting substantial manufacturing economies, and a superior product as well, the method comprising:

providing a plurality of shadow mask blanks each with a pattern of apertures photoetched therein, which blanks have been cut from a foil of steel, precision cold-rolled to a full hard condition with a thickness of about 6–8 mils, said foil being characterized by being composed of an interstitial free steel material;

subjecting a stack of said blanks to a limited annealing operation, said annealing operation being characterized by being carried out at a relatively low maximum temperature and for a relatively brief period sufficient only to achieve recrystallization of the material without causing significant grain growth, said maximum temperature being below the temperature at which the blanks mutually adhere, said relatively low maximum temperature being effective to avoid any significant sticking together of said blanks, thus avoiding any handling-related folding or creasing of the blanks normally associated with attempts to separate blanks stuck together in conventional high



temperature annealing operations, said blanks being substantially free of dents, creases, scratches and other handling-related mechanical defects which would be expected if the conventional high temperature anneal were employed; and,

clamping and drawing each blank to form a dished shadow mask without the interposition of vibration or roller leveling operations and thereby avoiding undesirable creasing, roller marking, denting, tearing or work hardening of the blank normally associated with these operations,

whereby the end product shadow mask, due to the use of a full hard, interstitial free steel material, and the obviation of a high temperature anneal and the necessary consequent vibration and roller leveling, is comparatively free of the aforesaid handling-related mechanical defects and is thus much less costly to manufacture than prior masks despite the higher initial material cost, and

whereby the end product shadow mask, due to the use of said interstitial free steel material, has an aperture pattern of improved definition as a result of more uniform stretching of the mask blank.

4,210,844

CATHODE RAY TUBE ARC SUPPRESSOR COATING

William E. Buescher, Seneca Falls, and Anthony V. Gallaro, Auburn, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

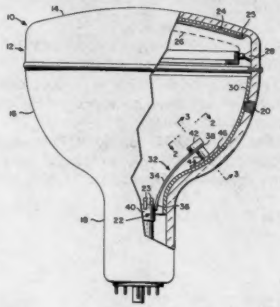
Filed Nov. 20, 1978, Ser. No. 962,494

Int. Cl.² H01J *29/88, 29/94*

U.S. Cl. 313—479 **5 Claims**

1. In a cathode ray tube comprised of a glass envelope having a viewing screen at one end thereof and a multi electrode electron gun formed for directing a beam of electrons to said screen at an opposite end thereof; an electrically conductive coating having a high electrical resistance disposed on the interior surface of said glass envelope and extending from said screen to said electron gun, said high electrical resistance coating having a resistance of from about 20,000 ohms to about 7 megohms and comprising a mixture of Fe_2O_3, K_2SiO_3 and graphite; the final electrode of said gun being electrically connected to said coating; and an antenna getter comprised of

an electrically conductive, flexible metal shaft having a proximal end and a distal end, said proximal end being connected to said final electrode and said distal end carrying a getter device, the improvement comprising: a layer of extremely high resis-



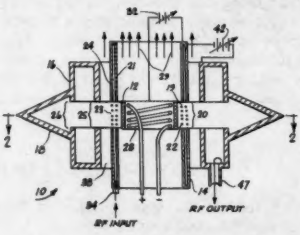
tance material overlying a portion of said high resistance coating, said extremely high resistance coating having a resistance about 100 times greater than said high resistance coating and comprising a mixture of Fe_2O_3 and a silicate, said getter device being in contact with said extremely high resistance layer.

4,210,845

TRIROTRON: TRIODE ROTATING BEAM RADIO FREQUENCY AMPLIFIER

Jean V. Lebacqz, Stanford, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1978, Ser. No. 963,495
Int. Cl.² H01J *25/22*
U.S. Cl. 315—5.25 **16 Claims**



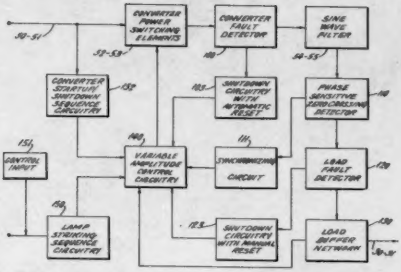
1. A rotating beam radio-frequency amplifier, including:
a cylindrical cathode having an outer curved surface for producing electrons;
radio-frequency waveguide input means including means for establishing a traveling wave for forming said electrons into a beam and rotating said beam around said cathode;
means for adding energy to said beam during said rotation; and
output means for extracting the energy of the beam, said input and output means including waveguides that support traveling waves at a frequency that is an integral multiple of one or more of the frequency of said established traveling wave.

4,210,846

INVERTER CIRCUIT FOR ENERGIZING AND DIMMING GAS DISCHARGE LAMPS

Dennis Capewell, Easton; David G. Luchaco, Macungie, and Joel S. Spira, Allentown, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 5, 1978, Ser. No. 966,643
Int. Cl.² H02M *7/515*; H05B *41/29, 41/39*
U.S. Cl. 315—121 **40 Claims**



16. An energy-conserving illumination control system consisting of:
a plurality of passive linear ballasts and respective gas discharge lamps therefor;
a single high frequency power source including power switching means having control electrode means for turning power on and off at an output frequency in excess of about 20 kHz, and a sine wave filter; said high frequency power source being connected to each of said plurality of passive linear ballasts and lamps;
the output wave shape of said high frequency power source being sinusoidal;
a zero crossing detector circuit for producing an output pulse each time the output current of said sine wave filter goes through zero;
a synchronizing circuit connected to said zero crossing detector circuit and producing an output pulse train at the frequency of the output current of said sine wave filter;
a variable amplitude control circuit coupled to said control electrode means and connected to said synchronizing circuit and producing output pulses to said control electrode means at said frequency of said output current of said sine wave filter;
and control circuit means connected to said variable amplitude control circuit for controllably delaying the phasing of said output pulses of said variable amplitude control circuit relative to the current zero time of said output current of said sine wave filter;
said control circuit means varying the amplitude of the wave shape of the output of said high frequency power source, thereby to vary the light intensity of each of said lamps; the energy consumed by said illumination control system being functionally related to the output light intensity from said plurality of lamps.

4,210,847

ELECTRIC WIND GENERATOR

Roger L. Shannon, Federal Way; Dale F. Watkins, Sumner, both of Wash., and John T. Pogson, San Jose, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

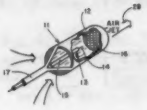
Filed Dec. 28, 1978, Ser. No. 974,154
Int. Cl.² H05H *1/00*
U.S. Cl. 315—111.9 **8 Claims**

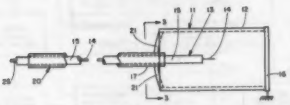
1. A portable device for generating an air jet from corona discharge comprising:

a housing made of dielectric material and means for positioning a high voltage probe therein,

said positioning means including a centering tube extending axially outward from one end of said housing;

a metallic screen mounted across the end of said housing opposite said positioning means and means grounding said screen;





a high voltage source external to said housing and a probe connected to said source and terminating in said housing for creating a corona discharge at the probe end in said housing; and

means insulating said probe from said centering tube, whereby said device may be held by said centering tube and an air jet generated by a flow of ions from said probe end to said screen may be selectively directed for cooling, venting or other purposes.

4,210,848

THIN-FILM EL DISPLAY PANEL WITH LIGHT-ACTIVATED WRITE AND ERASE MEANS

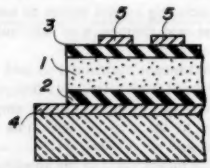
Chuji Suzuki, Nara; Masahiro Ise, Tenri; Kenzo Inazaki, Tenri, and Katsuyuki Machino, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 19, 1978, Ser. No. 925,973

Claims priority, application Japan, Jul. 20, 1977, 52-87767; Aug. 17, 1977, 52-99000; Sep. 6, 1977, 52-107424

Int. Cl.[2] H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.3 **9 Claims**



1. A display device comprising:

a thin-film EL display panel exhibiting a light brightness effect when excited by an applied voltage, said El display panel further exhibiting a hysteresis loop phenomenon when said applied voltage is plotted on X and Y coordinate axes with respect to said light brightness;

means for applying to said thin-film EL display panel a string of alternating fixed amplitude sustain voltage pulses the voltage amplitude of said sustain pulses being chosen at the voltage level appearing at the point in the hysteresis loop characteristics such that the difference between the minimum light brightness on the voltage increasing curve and the maximum light brightness on the voltage decreasing curve is substantially a maximum; and

flash lamp means for releasing light beams toward said thin-film EL display panel, said light beams being released in synchronism with the application period and pause period, respectively, of said alternating sustain pulses, said flash lamp means releasing a considerable quantity of light beams having a wave length of approximately 3,500 angstroms, whereby light excited write and erase operations are performed on said thin-film EL display panel.

4,210,849

ELECTRONIC CONTROL CIRCUITRY FOR TERMINATING FLASH OUTPUT

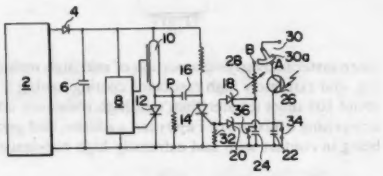
Mikio Naya; Yoshiharu Ohta, both of Izumi, and Hiroshi Hosomizu, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 802,852, Jun. 2, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,634

Claims priority, application Japan, Jun. 2, 1976, 51-64935

Int. Cl.[2] H05B *41/32*

U.S. Cl. 315—241 P **13 Claims**



1. Control circuitry for terminating flash output from a flash device coupled with a camera having a driving means for high speed continuous photography, said control circuitry comprising:

a first time constant circuit having a time constant depending on the amount of light reflected from an object illuminated by said flash device;

a second time constant circuit including a variable circuit element adjustable in accordance with the photographic cycle of high speed continuous photography;

a control circuit responsive to said first and second time constant circuits for interrupting the current through said flash device when the output of either said first or said second time constant circuit reaches a predetermined level, said second time constant circuit limiting the duration of flash firing such that the charging time of the flash device is synchronized with said photographic cycle; and

a change-over switch having a first position for simultaneously actuating both said first and second time constant circuits, and second and third positions for respectively actuating said first and said second time constant circuits.

4,210,850

CIRCUITS FOR OPERATING ELECTRIC DISCHARGE LAMPS

John Britton, Sevenoaks, England, assignor to The General Electric Company Limited, London, England

Filed Jun. 15, 1978, Ser. No. 915,614

Claims priority, application United Kingdom, Jun. 27, 1977, 26771/77

Int. Cl.[2] H05B *41/16*

U.S. Cl. 315—290 **6 Claims**

1. A circuit for operating an electric discharge lamp comprising:

(A) a pair of input terminals for connection to an alternating current supply;

(B) a pair of output terminals for connection across the lamp;

(C) a reactive ballast impedance connected between one of the input terminals and one of the output terminals, said ballast impedance having a tapping point;

(D) a connection between the other input terminal and the other output terminal;

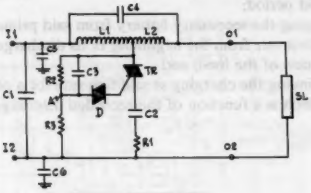
(E) a controllable electronic switching device connected

between said tapping point and said other input terminal; and

(F) a triggering circuit for said switching device comprising:

(i) a pair of resistances connected in series directly between said tapping point and said other input terminal;

(ii) a capacitance connected across one of said resistances; and



(iii) a voltage sensitive breakdown device connected between the junction between said resistances and the control electrode of said switching device;

(G) the triggering circuit rendering said switching device alternately non-conducting and conducting several times during each of at least one set of alternate half cycles of the supply voltage when the lamp has not fired, thereby to produce a burst of high voltage pulses between the output terminals for starting the lamp.

4,210,851

MOTOR CONTROL SYSTEM

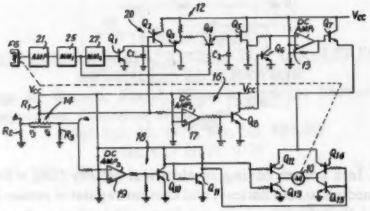
Tadamitsu Wakamiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 22, 1978, Ser. No. 935,967

Claims priority, application Japan, Aug. 25, 1977, 52-101123

Int. Cl.[2] H02P 5/00

U.S. Cl. 318—257 **12 Claims**



1. A motor control system for controlling the speed and direction at which a motor operates, comprising:

drive means for supplying a drive current to said motor, the magnitude of said drive current being determinative of the speed at which said motor operates;

steering means for steering said drive current to said motor in first and second current paths to determine the direction at which said motor operates;

potentiometer means having first and second terminals, a resistance connected between said first and second terminals, and an adjustable wiper settable along said resistance to determine a desired speed and a desired direction of operation of said motor, the setting of said wiper including a predetermined zero speed setting;

power supply means having a power terminal and a reference terminal for providing an operating potential thereacross, said power terminal being coupled to said wiper and said reference terminal being coupled to said second terminal of said potentiometer means; and

first resistor means for coupling said first terminal of said potentiometer means to said reference terminal;

said wiper being coupled to said drive means and said first terminal being coupled to said steering means, whereby the setting of said wiper determines the magnitude of the voltage supplied thereby to said drive means so as to determine the speed at which said motor operates, and the setting of said wiper also determines the magnitude of the voltage supplied to said steering means by said first terminal to determine the direction at which said motor operates.

4,210,852

ELECTRIC NUTRUNNER

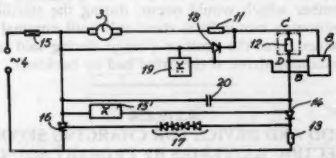
Fredrik Gustavson, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Continuation of Ser. No. 739,711, Nov. 8, 1976, abandoned. This application Dec. 7, 1978, Ser. No. 967,139

Claims priority, application Sweden, Nov. 14, 1975, 7512866

Int. Cl.[2] H02P 3/00

U.S. Cl. 318—459 **13 Claims**



1. An electric nutrunner for tightening screw joints to a predetermined tightening torque or clamping force, said nutrunner comprising:

voltage supply means;

motor-starting means coupled to said voltage supply means;

drive means, including a DC motor, coupled to said motor-starting means, for tightening a screw joint;

control means coupled to said drive means; and

means coupling said control means with said voltage supply means;

said control means including:

signal generating means for measuring the current flowing through said D.C. motor of said drive means, said signal generating means being responsive to a measured D.C. current value corresponding to said predetermined tightening torque or clamping force being reached for providing a terminating signal for causing the stopping of said D.C. motor, thereby causing the tightening of the screw joint to be terminated; and

compensating control means coupled to said signal generating means for measuring the growth rate of said current flowing through said D.C. motor and being responsive to said measured growth rate which corresponds to joint stiffness for causing said signal generating means to provide said terminating signal as a function of said measured growth rate, thereby providing compensation for a variation in the terminating torque of the screw joint as the result of varying joint stiffness by varying the time of generation of said terminating signal.

4,210,853

CONTROL DEVICE WITH AN INTEGRATING POSITION DRIVE

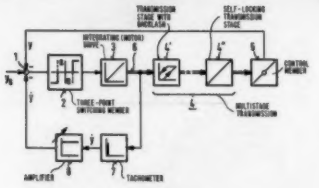
Kurt Ewe, and Edmund Linzenkirchner, both of Karlsruhe, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 912,985

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726112

Int. Cl.[2] G05B 11/01

U.S. Cl. 318—630 4 Claims



1. In a control device having an integrating positioning drive with a transmission backlash and lag, the device having a first feedback signal proportional to the position of a control member which is driven by the positioning drive, the improvement comprising:

(a) means for providing a second feedback signal which is proportional to the positioning rate and which is scaled by a scaling factor proportional to the lag of the positioning drive; and

(b) a transmission having an amount of backlash which is greater than the sum of the position change of the control member which would occur, during the starting of the positioning motor from stand-still until nominal speed is reached, plus the position change during said lag of the positioning drive, if the drive had no backlash.

4,210,854

METHOD AND DEVICE FOR CHARGING SECONDARY ELECTRIC BATTERIES BY PRIMARY SOURCES

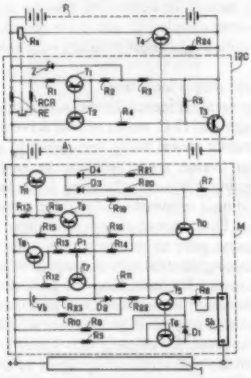
Pierre Godard, Tremblay les Gonesse, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Mar. 22, 1978, Ser. No. 888,852

Claims priority, application France, Mar. 31, 1977, 77 09831

Int. Cl.[2] H02J 7/04

U.S. Cl. 320—10 10 Claims



1. A method of charging a secondary electric battery from a primary source of electric current, the secondary battery being connected to supply an intermittently applied load that draws a current which is greater than the primary source is capable of supplying, the method comprising:

sensing the current drawn by the load whenever the load is applied to the secondary electric battery;

continuously recording a signal proportional to said sensed current drawn by the load during each period of application to obtain a value proportional to the total quantity of electricity discharged by the secondary battery during said period;

charging the secondary battery from said primary source at a first rate from the beginning of its discharge upon application of the load; and

continuing the charging at said first rate for a period of time which is a function of the recorded discharge value.

4,210,855

APPARATUS FOR REGULATING THE CURRENT DRAWN FROM AN ELECTRIC BATTERY

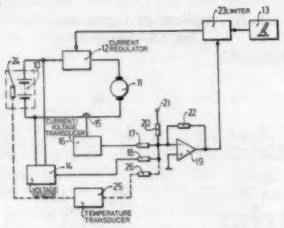
Helmut Harer, Aldingen-Neckarrems; Rolf Schulze, Vaihingen, and Josef Juhasz, Vaihingen-enz-Rosswag, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,932

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726367

Int. Cl.[2] H02J 7/04

U.S. Cl. 320—13 12 Claims



1. In a system having an electrical battery (10), a load (11) connected to said battery, and current regulator means (12) for regulating the current drawn from said battery under external control, the improvement comprising, in accordance with the invention, voltage sensor means (14) connected across said battery for furnishing a sensed voltage signal corresponding to the voltage across said battery;

current sensor means (15-16) connected in series with said load for furnishing a sensed current signal corresponding to said current drawn from said battery;

means for furnishing a reference signal;

additive combining means (17, 18) connected to said voltage sensor means and said current sensor means, adding the voltage signal and the current signal, and furnishing a combined addition signal;

comparing means (19) connected to said combining means and said means for furnishing a reference signal for comparing said combined signal to said reference signal and furnishing a difference signal corresponding to the difference therebetween;

and limiter means (23) interconnected between said comparing means and said current regulator means, for controlling said current regulator means.

4,210,856

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

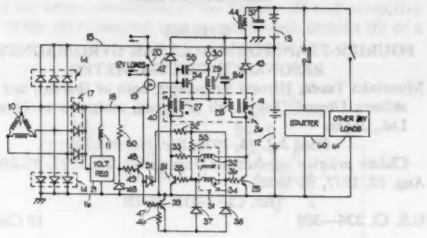
Joseph D. F. Taylor, Kidderminster, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 20, 1978, Ser. No. 888,274

Claims priority, application United Kingdom, Apr. 2, 1977, 14014/77

Int. Cl.[2] H02J 7/14

U.S. Cl. 320—17 11 Claims



1. A battery charing system for a road vehicle comprising an alternator, a rectifier connecting the alternator to a main battery for charging thereof by the alternator, a voltage regulator connected to the alternator and operating to control the output voltage of the alternator, and a d.c. to d.c. converter connecting the main battery to an auxiliary battery which is in series with the main battery, the d.c. to d.c. converter including a pair of semi-conductor switching elements, an auto-transformer having a pair of main windings, each connected at one end to one terminal of the main battery and connected at its other end through a respective one of said semi-conductor switching elements to the other terminal of the main battery, said switching elements forming part of an oscillator so that the switching elements are turned on alternately, a diode, and at least one further winding connected in series with said diode between said other end of one of the main windings and a terminal of the auxiliary battery.

4,210,857

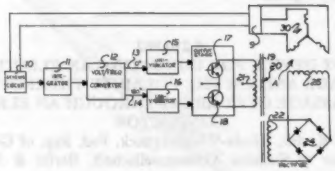
FIELD EXERTING AND REGULATOR CIRCUIT FOR A BRUSHLESS ALTERNATOR

George K. Korbell, Euclid, Ohio, assignor to Sheller-Globe Corporation, Cleveland, Ohio

Filed Apr. 19, 1978, Ser. No. 897,689

Int. Cl.[2] H02P 9/26

U.S. Cl. 322—28 6 Claims



1. A field exciting and regulating system for an electrodynamic machine for generating electricity with the machine having a rotor, a field winding on the rotor, and a rotary transformer having a secondary winding rotatable with the rotor with the secondary winding being connected to energize the field winding and a primary winding having first and second winding sections for conducting currents in opposite directions in the primary winding, said system comprising circuit means for regulating the output voltage level of the machine comprising a first circuit for providing a potential which varies as a function of the output voltage of the machine, a voltage controlled oscillator connected to said first circuit for providing a first and second series of triggering signals both having a frequency which varies with said potential of said first circuit with the first and second triggering signals being approximately 180° out of phase, second circuit means for producing first and second pulse trains for effecting energization of said first and second primary sections alternately with a current pulse of a fixed width comprising pulse generating circuitry responsive to said first series and second series of triggering signals to respectively provide said first and second pulse trains wherein each pulse is of fixed duration and has a duration substantially equal to the half period for the frequency of said oscillator when full field current is supplied.

4,210,858

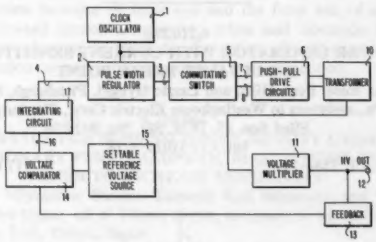
HIGH FREQUENCY HIGH VOLTAGE POWER SUPPLY

Leland W. Ford, Boulder, Colo.; Alberto M. Ramirez, Tucson, Ariz., and Gerald L. Smith, Broomfield, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,897

Int. Cl.[2] G03G 15/00; H01T 19/00

U.S. Cl. 323—22 T 8 Claims



1. A power supply providing a regulated output signal adapted for rapid change in signal amplitude comprising:

a settable reference voltage,

means for comparing said output signal and said reference voltage to produce a difference voltage,

a generator of recurrent pulses having widths controllable in response to an input voltage,

means for applying said difference voltage as said input voltage to said generator,

a transformer means having separate primary and secondary windings, said recurrent pulses being applied to said primary winding,

said transformer including an energy storage means for limiting the short circuit output current and for providing a transformer output that is a linear function of the controllable width of said recurrent pulses,

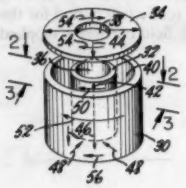
said secondary winding being divided into serially connected cylindrical winding sections, each section having a fraction of the total number of turns of said secondary winding, the turns of adjacent sections being insulated from each other, and

a voltage multiplier connected to said secondary winding and providing said output signal.

4,210,859
INDUCTIVE DEVICE HAVING ORTHOGONAL WINDINGS

Paul L. Meretsky, 46/11 Keren Hyesod, and Amiram Carmon, 35 Ruth St., both of Haifa, Israel (32000), assignors to Technion Research & Development Foundation Ltd.; Paul L. Meretsky and Amiram Carmon, all of Haifa, Israel

Filed Apr. 18, 1978, Ser. No. 897,395
Int. Cl.[2] G05F 7/00
U.S. Cl. 323—44 R **51 Claims**

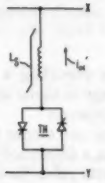


1. An inductive device comprising in combination:
a magnetic core formed of ferromagnetic material;
inductive means for producing a first magnetic field in a closed path substantially throughout said core;
inductive means for producing a second magnetic field in a closed path substantially throughout said core;
wherein said first field is substantially orthogonal to said second field at all points within said core; and
means for controlling one of said magnetic fields to reduce the rate of fall-off of the inductance of the inductive means which produces the other orthogonal field while increasing the inductive coupling between the inductive means.

4,210,860
VAR GENERATOR WITH CURRENT SENSITIVE INDUCTANCE BREAK POINT

John Rosa, Penn Hills, and Laszlo Gyugyi, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1978, Ser. No. 942,838
Int. Cl.[2] H02J 3/18
U.S. Cl. 323—119 **17 Claims**

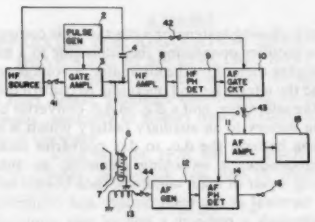


1. A VAR generator of the type which is connected to an electrical system for the purpose of supplying reactive power thereto, comprising:
(a) control means interconnected with said electrical system for determining the amount of reactive power that is to be provided to said electrical system during a given period of time and for providing an output signal related thereto; and
(b) switch controlled inductive means connected to said control means to receive said output signal therefrom and connected to said electrical system for delivering said reactive power thereto as a function of a control means determined conduction interval during said given period of time, said inductive means having a first value of inductance for values of reactive current conducted therethrough which are equal to or less than a predetermined amount, said inductive means having a second value of inductance for values of reactive current conducted therethrough which are greater than said predetermined amount, said reactive power being related to said reactive current, the amount of reactive power thus delivered to said electrical system for a given conductive interval being dependent upon whether said reactive current exceeds said predetermined amount or not during said given conduction interval.

4,210,861
FOURIER-TRANSFORM NUCLEAR GYROMAGNETIC RESONANCE SPECTROMETER

Munetaka Tsuda; Hiroshi Yokokawa, both of Ibaraki, and Yoshiharu Utsumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 14, 1978, Ser. No. 924,721
Claims priority, application Japan, Jul. 21, 1977, 52-88020; Aug. 12, 1977, 52-96009
Int. Cl.[2] G01R 33/08
U.S. Cl. 324—308 **10 Claims**



1. A Fourier-transform nuclear gyromagnetic resonance spectrometer comprising:
means for establishing a unidirectional magnetic field;
means for placing a specimen in said unidirectional magnetic field;
means for generating pulse-like high-frequency waves and continuous high-frequency waves having a frequency substantially equal thereto;
means for selectively feeding said pulse-like high-frequency waves and said continuous high-frequency waves to said specimen, such that resonance signals and free induction decay signals are selectively generated by said specimen;
means for detecting said resonance signals and free induction decay signals; and
means for Fourier-transforming said detected free induction decay signals.

4,210,862
TEST DEVICE FOR INDICATING AN ELECTRIC VOLTAGE AND/OR THE POLARITY THEREOF, AND THE PASSAGE OF CURRENT THROUGH AN ELECTRIC CONDUCTOR

Manfred Koslar, Rheda-Wiedenbrueck, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1978, Ser. No. 895,960
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1977, 2717286; Aug. 2, 1977, 2734833; Aug. 5, 1977, 2735374; Aug. 5, 1977, 7724448[U]; Dec. 20, 1977, 2756830
Int. Cl.[2] G01R 31/02, 19/16, 1/06
U.S. Cl. 324—51 **2 Claims**

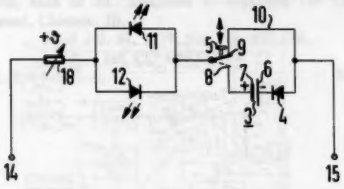
1. A test device for indicating an electrical voltage and/or the polarity thereof, as well as the passage of current through an electrical conductor, comprising two handles, which are connected by means of a cable and are provided with contact tips, and one of the handles contains two luminous diodes connected antiparallelly and preconnected to a ceramic cold

conductor as a current limiting resistor and for testing for passage of current through an electrical conductor, the following features are present:

(a) a battery (3) connected in series with a protective diode (4) mounted in one of the handles (1), in which said cold conductor (18) and the luminous diodes (11, 12) are housed;

(b) a keying switch (5) and a Zener diode (19) connected in parallel and mounted in said handle (1);

(c) the series connection of the battery (3) and protective diode (4) connected to a normally open contact (8) of a



keying switch (5), which is normally connected with a switch contact (9) connected to a parallel line (10), which bridges the battery (3) and the protective diode (4);

(d) the keying switch (5), Zener diode (19), battery (3) and protective diode (4) connected in series with the antiparallel connection of the luminous diodes (11, 12);

(e) the battery (3) is housed with positive and negative terminals (6, 7) in a removeable housing (22), which, by means of projections (24) in the inserted state, engage the handle (1) and is removeable only to an extent such that the opening (26) of the recess (23) in the handle (1) remains closed.

4,210,863

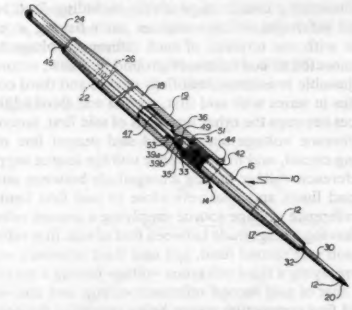
EXTENDIBLE PROBE FOR USE WITH TEST INSTRUMENTS

Bill Hunt, Snohomish, and Dean R. Merriman, Mukilteo, both of Wash., assignors to Huntron Instruments, Inc., Seattle, Wash.

Continuation of Ser. No. 781,874, Mar. 28, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,263

Int. Cl.² G01R *31/02*

U.S. Cl. 324—72.5 **10 Claims**



1. A probe with an extendible electrode for use with electrical test apparatus, comprising:

an elongated, small diameter electrode which is electrically insulated along its length except for a small region about one end thereof to facilitate convenient operative contact with a selected point in a crowded electrical circuit, wherein said electrode is adapted to permit connection with a test lead which in turn is connectable to the electrical test apparatus;

an elongated housing for said electrode, wherein said housing comprises forward and rearward sections movable relative to each other, said forward section including (1) an opening at its front end at least the size of the electrode, through which said electrode extends, and (2) a slotted projection having an opening therein at its back end, through which said electrode also extends, wherein the opening in said projection decreases in diameter under pressure applied to the projection, said forward section extending a substantial distance forward of the front end of said rearward section, said rearward section having a front end portion which overlays and engages the slotted projection of said forward section, said rearward section extending a substantial distance beyond the back end of said forward section, the diameter of said rearward section being such that the rearward section may be easily held by an operator, the diameter of said forward section being smaller than that of said rearward section, so as to facilitate the use of the apparatus in crowded electrical circuit, wherein the front end portion of said rearward section engages the slotted projection of said forward section in such a manner that as said rearward section moves in one direction relative to the forward section, pressure increases on the projection, forcing it tight against said electrode, thereby holding said electrode in place, and further such that as said rearward section moves in the opposite direction relative to the forward section, pressure decreases on said projection, thereby releasing the projection from said electrode and permitting said electrode to be freely moved into a desired position relative to said housing, wherein the entire length of said rearward section and the portion of said forward section between its front end and the front end of said rearward section are exposed when said electrode has been clamped in place by the action of said rearward section on said projection of said forward section.

4,210,864

APPARATUS FOR SENSING TONER DENSITY USING A STATIONARY FERROMAGNETIC MASS WITHIN THE TONER TO INCREASE SENSITIVITY

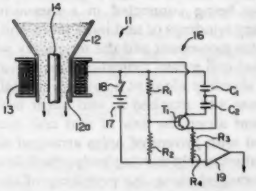
Seiichi Miyakawa; Susumu Tatsumi; Koji Sakamoto, and Yoshihiro Ogata, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 18, 1978, Ser. No. 897,466

Claims priority, application Japan, Apr. 19, 1977, 52-44925

Int. Cl.² G01R *33/00*; G01N *9/00*

U.S. Cl. 324—204 **7 Claims**



3. An apparatus for sensing a toner density of a powdered toner mixture including a non-magnetic toner component and a ferromagnetic carrier component, the toner density being constituted by a ratio of the toner component to the carrier component, the apparatus comprising:

container means for containing the toner mixture, said container means being disposed to have toner mixture pass therethrough such that the toner density of different portions of the toner mixture may be sensed in passing through the container means;

an electromagnetic coil wound around the outside of said container means;

a stationary electrically conductive mass provided in the container means;

power source means for applying an alternating electric signal to the coil; and

sensor means for sensing an amount of dissipation of the electric signal, said stationary mass being constructed and arranged such that the flux passing through the stationary mass results in power dissipation of the electric signal in the stationary mass through conversion into heat such that the sensitivity to detect small changes in toner density is enhanced in that a relatively small change in toner density will result in a relatively large change in power dissipation.

4,210,865

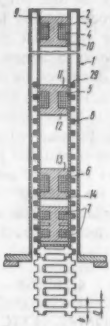
POSITION SENSOR OF LINEARLY MOVING BODIES

Vladimir P. Nikolaev, ulitsa Proletarskaya, 58, kv. 91; Leopold I. Chaika, bulvar Trudyaschikhsya, 7, kv. 203, both of Kolpino Leningradskoi oblasti, and Ivan V. Ivanov, Pozharny pereulok, 1, kv. 9, Tosno Leningradskoi oblasti, all of U.S.S.R.

Filed Dec. 12, 1977, Ser. No. 859,792

Int. Cl.[2] G01R *33/00*

U.S. Cl. 324—207 **1 Claim**



1. A position sensor for determing the position of a body in linear motion comprising:

a plurality of inductance coil means, each having a primary winding and a secondary winding wound on spool like cores and coaxially spaced one after another, an additional coil means coaxially spaced after said inductance coil means and having two primary and two secondary windings, each primary and secondary winding being wound on a respective core of a two spool core, said secondary windings being connected in a measuring circuit, the secondary windings of said inductance coil means indicating coarse movement and the secondary windings of said additional coil means indicating fine movement;

a tubular shunting element arranged coaxially around said coil means and attached to said linear moving body, for movement along the axis of said coil means, and being provided with groups of holes arranged along the travel path of the linearly moving body, the holes of each group being arranged along the periphery of the shunting element, the distance L between the outer ends of said additional coil means being derived from the following relationship:

$$L=n(a+b)-\tfrac{1}{2}(a+3b),$$

where a is the width of a hole of the shunting element measured along the axis of its travel,

b is the distance between the groups of holes of the shunting element, and

n is a natural number beginning with n=3, said shunting element, as it moves along the axis of the coils, shunting the cores of the coils so that a signal is produced in the output circuit of a respective coil, which carries information on the position of the body in linear motion.

4,210,866

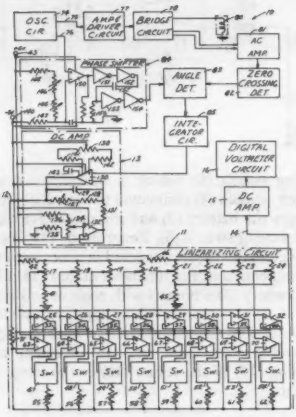
LINEARIZING CIRCUIT FOR A NON-DESTRUCTIVE TESTING INSTRUMENT HAVING A DIGITAL DISPLAY

Thomas E. Paulson, Glenview, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed May 8, 1978, Ser. No. 903,872

Int. Cl.[2] G01R *33/12*

U.S. Cl. 324—222 **5 Claims**



1. In a non-destructive testing instrument including probe means for physical association with structure to be tested and probe circuit means associated with said probe means and operative to develop a DC voltage having a magnitude varying between first and second limits and having a non-linear relationship to units of measurement of a physical characteristic of the structure tested, a linearizing circuit comprising an input line and a reference ground line for connection to said probe circuit means for application of said DC voltage therebetween, an output line at which an output voltage of said linearizing circuit is produced, and a resistance connected between said input and output lines, at least first, second and third stages in said linearizing circuit respectively including first, second and third reference voltage sources each having a pair of terminals with one terminal of each reference voltage source being connected to said reference ground line, first, second and third adjustable resistances, and first, second and third connection means in series with said first, second and third adjustable resistances between the other terminals of said first, second and third reference voltage sources and said output line of said linearizing circuit, said first reference voltage source supplying a first reference voltage having a magnitude between said first and second limits and relatively close to said first limit, said second reference voltage source supplying a second reference voltage having a magnitude between that of said first reference voltage and said second limit, and said third reference voltage source supplying a third reference voltage having a magnitude between that of said second reference voltage and said second limit, said first connection means being operative for connecting said first adjustable resistance between the said other output terminal of said first reference voltage source and said output line when the magnitude of said linearizing circuit output voltage is between the magnitude of said first reference voltage and said second limit, said second connection means being operative for connecting said second adjustable resistance between the said other output terminal of said second

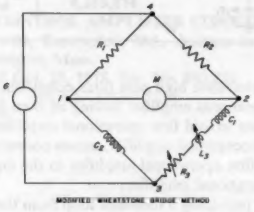
reference voltage source and said output line when the magnitude of said output voltage is between the magnitude of said second reference voltage and said second limit, and said third connection means being operative for connecting said third adjustable resistance between the said other output terminal of said third reference voltage source and said output line when the magnitude of said output voltage is between the magnitude of said third reference voltage and said second limit.

4,210,867

INDUCTION COIL METHOD FOR DETECTING UNDERGROUND FLAME FRONTS

Irwin Ginsburgh, Morton Grove, and John D. McCollum, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,176
Int. Cl.² G01V *3/00*
U.S. Cl. 324—323 **8 Claims**



1. In the in situ combustion of a subterranean carbonaceous stratum, a method for detecting an underground flame front comprising

(a) providing at least one stationary multi-turn coil of wire on the surface of the ground electrically connected into one or more circuits in which an electrical resonance condition is established;

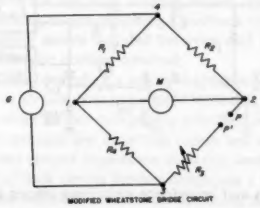
(b) continuously monitoring the change in impedance characteristics in one or more of said circuits as the combustion progresses and providing an indication of the location, speed, and vertical and lateral movement of said flame front in response to said monitored change in impedance characteristic.

4,210,868

METHOD FOR DETECTING AN UNDERGROUND FLAME FRONT USING RESISTANCE PROBES

Irwin Ginsburgh, Morton Grove, and John D. Mc Collum, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 17, 1978, Ser. No. 925,177
Int. Cl.² G01V *3/02*
U.S. Cl. 324—323 **7 Claims**



1. In the in situ combustion of a subterranean carbonaceous stratum, a method for detecting the flame front comprising

(a) providing two or more stationary probes inserted into the ground electrically connected in one or more circuits capable of measuring the resistance between pairs of probes,

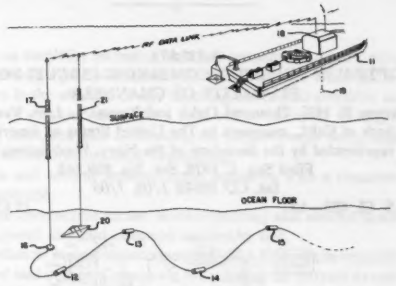
(b) monitoring the change in resistance between two or more stationary probes during the combustion in one or more of said circuits and providing an indication of the location, pattern and orientation of said flame front in response to said monitored change in resistance.

4,210,869

ROTATING TELLURIC FIELD MEASUREMENTS

Goethe M. Groenendyke, deceased, late of Dallas, Tex. (by Betty Groenendyke, sole heir), and Gustave L. Hoehn, Jr., Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 875,264, Feb. 6, 1978, abandoned. This application Apr. 2, 1979, Ser. No. 26,144
Int. Cl.² G01V *3/00*
U.S. Cl. 324—349 **8 Claims**



1. In magneto-telluric geophysical exploration, the system for determining the earth's electric telluric field in two orthogonal directions comprising:

(a) means for measuring the earth's telluric field along a first horizontal line in a first known direction and for producing a first telluric signal representative thereof,

(b) means for measuring the earth's telluric field along a second horizontal line in a second known direction and producing a second telluric signal representative thereof,

(c) means for producing a pair of signals representative of the values of said first and second telluric signals along a third predetermined horizontal line and for combining said pair of signals to provide a signal representative of the earth's electric telluric field along said third horizontal line, and

(d) means for producing a pair of signals representative of the values of said first and second telluric signals along a fourth horizontal line orthogonal to said third horizontal line and for combining said pair of signals to provide a signal representative of the earth's electric telluric field along said fourth horizontal line.

4,210,870

SIGNAL TRANSMITTING SYSTEM

Kari Kallio-Könnö, Helsinki, Finland, assignor to Vaisala Oy, Finland

Filed Dec. 28, 1978, Ser. No. 973,796
Int. Cl.² H04B *1/70, 1/034*
U.S. Cl. 455—95 **7 Claims**

1. A signal transmitting system for transmitting signals from a radiosonde to a surface station, said signal transmitting system comprising

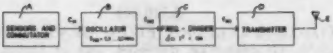
capacitive sensors in the radiosonde for producing capacitive signals dependent upon a quantity being measured;

an oscillator in the radiosonde having an output frequency

controlled by the capacitive signals, said output frequency being dependent upon said capacitive signals;

a frequency divider for dividing said output frequency by a factor d of the order of 2^6 to 2^8, said divider having an input frequency and an output frequency; and

a high frequency radio transmitter in the radiosonde frequency modulated by a frequency



$$f_{MI}=f_{MO}/d$$

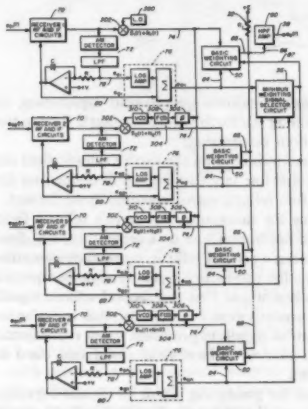
wherein f_{MI} is the output frequency of said divider and f_{MO} is the input frequency of said divider.

4,210,871

OPTIMUM DIVERSITY COMBINING CIRCUIT FOR A PLURALITY OF CHANNELS

Eugene R. Hill, Thousand Oaks, and Eugene L. Law, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,163
Int. Cl.[2] H04B 1/06, 7/08
U.S. Cl. 455—137 **22 Claims**



13. An AGC weighted diversity combiner circuit responsive to AGC voltages from AGC loops of a plurality of receivers as well as respective instantaneous input signal and noise voltages of the receivers for combining a plurality of diversity signals whereby the output signal to noise ratio is maximized comprising:

a. a plurality of weighting circuits each responsive to a respective independent one of said AGC voltage from a respective one of said AGC loops and to respective said instantaneous input signal and noise voltages from respective said receivers for generating a plurality of respective independent weighted diversity signals, each respective weighted diversity signal being associated with a respective receiver; and

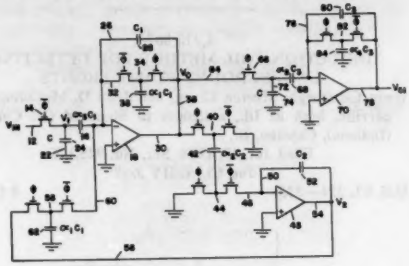
b. means for summing said plurality of weighted diversity signals, said summed diversity signals being the output signal and noise voltages with maximized signal-to-noise ratio.

4,210,872

HIGH PASS SWITCHED CAPACITOR FILTER SECTION

Roubik Gregorian, Sunnyvale, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Sep. 8, 1978, Ser. No. 940,717
Int. Cl.[2] H03F 1/34
U.S. Cl. 330—9 **8 Claims**



5. A sampled-data high pass filter comprising

a first operational amplifier having its own feedback loop;

input means to said first operational amplifier;

a second operational amplifier, means connecting the output of said first operational amplifier to the input of said second operational amplifier;

means for providing a feedback loop from the output of said second operational amplifier to said input means of said first operational amplifier;

a third operational amplifier having its own feedback loop;

means connecting the output of the first operational amplifier to the input of said third operational amplifier;

a plurality of switched capacitors in said feedback loops and said connection means;

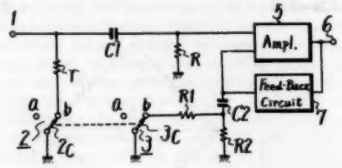
switch means operated by a continuous two-phase clock generator for controlling the charging and discharging of said switched capacitors so that said filter produces a predetermined filter characteristic with a third order transfer function.

4,210,873

GAIN AND IMPEDANCE SWITCHING CIRCUIT FOR AN AMPLIFIER

Tadao Suzuki, Tokyo, and Hirohito Kawada, Mitaka, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,103
Claims priority, application Japan, Aug. 29, 1977, 52/115397[U]
Int. Cl.[2] H03G 3/14
U.S. Cl. 330—51 **8 Claims**



1. A gain and impedance switching circuit for an amplifier comprising:

(a) an amplifier having input, feedback and output terminals;

(b) a feedback circuit having first and second impedances, the first impedance of which is connected between the feedback terminal and the output terminal of said amplifier, and the second impedance of which is connected

between said feedback terminal of said amplifier and a reference point;

(c) a third impedance connected between the input terminal of said amplifier and said reference point;

(d) first circuit means having a fourth impedance and a first switch and connected between the input terminal of said amplifier and said reference point; and

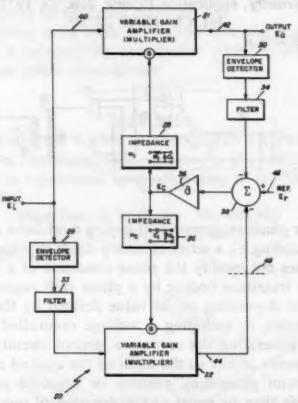
(e) second circuit means having a fifth impedance and a second switch and connected between the feedback terminal of said amplifier and said reference point, said first and second switches being cooperated with each other so as to increase the gain of said amplifier as soon as the input impedance of said amplifier decreases.

4,210,874

GAIN CONTROL AMPLIFIER CIRCUIT

Jacob F. Moskowitz, Kensington, Md., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 23, 1978, Ser. No. 953,821
Int. Cl.[2] H03G 3/26
U.S. Cl. 330—134 **2 Claims**



1. A gain control circuit for controlling the gain of a variable gain amplifier having input, output and gain control terminals comprising:

first and second means for detecting the amplitudes, respectively, of an input signal at said input terminal and an output signal at said output terminal;

filtering means coupled between said first and said second detecting means for applying a signal to said control terminal, said filtering means including a feedback circuit and a first impedance means coupled between said feedback circuit and said gain control terminal;

said feedback circuit including a second impedance network complimentary to said first impedance network;

said feedback circuit further comprising a multiplying means coupled between said first detecting means and an output terminal of said second impedance network; and

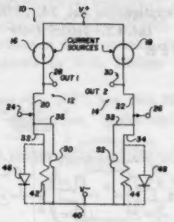
wherein said feedback circuit further comprises a summing means coupled between said second detecting means and an output terminal of said multiplying means, said summing means combining the amplitude of said output signal and a reference signal with the product of the input signal amplitude times a signal of said second impedance network to provide a sum signal to input terminals of said first and said second impedance networks

4,210,875

INTEGRATED AMPLIFIER WITH ADJUSTABLE OFFSET VOLTAGE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 29, 1978, Ser. No. 974,477
Int. Cl.[2] H03F 3/45; B01J 17/00
U.S. Cl. 330—261 **25 Claims**



1. In an amplifier including first and second separate current paths having a predetermined differential voltage offset therebetween in the absence of any input signals to said amplifier an in each of said current paths a field effect transistor having a source, drain and gate electrodes, the improvement being said field effect transistors each comprising:

a first and second separate drain segments with a common electrode;

fusible conductive means interconnecting said second drain segment and said common electrode; and

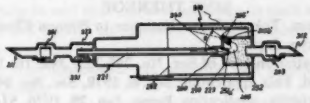
impedance means interconnecting said first drain segment and said common electrode for steering the current to said fusible conductive means produced when a voltage is applied across the gate and drain segments to blow said fusible conductive means and alter said voltage offset.

4,210,876

METAL VAPOR LASER

Yoshiro Ogata, Ibaraki, Japan, assignor to Matsushita Electronics Corporation, Kadoma, Japan

Filed Dec. 7, 1977, Ser. No. 858,404
Claims priority, application Japan, Dec. 13, 1976, 51-149976
Int. Cl.[2] H01S 3/03
U.S. Cl. 331—94.5 G **10 Claims**



1. A metal vapor laser discharge tube comprising:

an anode,

a cathode,

a laser capillary,

a metal reservoir disposed at one end of said laser capillary between said anode and said laser capillary,

an air-tight envelope enclosing said cathode and said laser capillary, and

a condenser coaxial with said laser capillary and said cathode disposed in a discharge path between said laser capillary and said cathode for condensing metal vapor, said discharge path being formed inside said condenser.

4,210,877

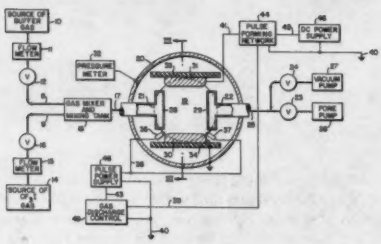
SPLIT GROUND STATE ATOMIC IODINE OR BROMINE LASER

Lyn D. Pleasance, Allegheny County; Ernest P. Riedel, Westmoreland County, and Lelland A C. Weaver, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 759,504, Jan. 14, 1977, abandoned, which is a continuation of Ser. No. 577,954, May 15, 1975, abandoned. This application Jul. 24, 1978, Ser. No. 927,306

Int. Cl.[2] H01S *3/09*

U.S. Cl. 331—94.5 PE 9 Claims



1. Laser apparatus comprising:

an enclosure;

a gas in said enclosure comprising an inert buffer gas and an active gas having the formula $C_nY_{2n+1}X$, wherein Y is H or F, X is either I or Br and n is 1, 2, 3 or 4;

spaced apart electrode means defining a volume discharge region therebetween;

means for producing a flow of said gas through said volume discharge region;

means for exciting said gas by producing electrons to collide with the molecules of said active gas to produce electrically excited atomic iodine or bromine;

said means for exciting said gas including;

(1) means for providing free electrons to the volume discharge region both prior to and during a volumetric electrical discharge; and

(2) pulse dc excitation means operably connected to said spaced apart electrodes to produce a volumetric electrical discharge across said electrode to excite said gas; and

means for producing stimulated emission of radiation from said gas.

4,210,878

SEMICONDUCTOR LASER ELEMENT HAVING A UNITARY FILM ON A LASER CRYSTAL AND A HEAT SINK THEREOF

Hiroo Yonezu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

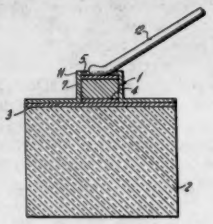
Continuation-in-part of Ser. No. 760,373, Jan. 18, 1977, abandoned. This application Sep. 6, 1978, Ser. No. 940,305

Claims priority, application Japan, Jan. 20, 1976, 51-5336

Int. Cl.[2] H01S *3/19*

U.S. Cl. 331—94.5 H 11 Claims

1. A semiconductor laser element comprising a semiconductor laser crystal having a pair of opposing reflection surfaces and a pair of opposing principal surfaces, a pair of ohmic contacts at least on predetermined areas of the respective principal surfaces, a heat sink having a planar surface wider than each of said principal surfaces of said laser crystal, a layer of a fusible metal on said planar surface of said heat sink, said fusible metal being fusible at a temperature below about 370° C., said laser crystal being fused to said heat sink by said fusible metal layer with one of said contacts brought into contact with a predetermined portion of said fusible metal layer, said fusible metal layer thereby having an exposed portion that is left uncovered by the laser crystal fused to said heat sink, and a unitary film of an electrically insulating material continuously



covering at least said reflection surfaces of said laser crystal and said exposed portion of said fusible metal layer.

4,210,879

FOUR-PHASE STAGGERED SHIFT KEYING MODULATOR SYSTEM

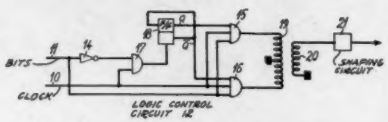
Jean-Pierre R. Poitevin, 53, rue Denis-Gogue, 92140 Clamart, and Pierre C. Brossard, 9, rue des Fleurs, 78190 Montigny-le-Bretonneux, both of France

Filed Jun. 5, 1978, Ser. No. 912,513

Claims priority, application France, Jun. 13, 1977, 77 18770

Int. Cl.[2] H04L *27/20*

U.S. Cl. 332—9 R 6 Claims



1. A four phase staggered shift keying modulator employing transition coding by a series of binary digits in which each bit does or does not modify the phase condition of a carrier according to transition coding by a phase shift representing its contribution depending on its value defined by the two bits which precede it, including a voltage controlled oscillator means for generating the carrier, a control circuit, means to apply the series of bits to the input of the control circuit, the control circuit generating positive or negative pulses of a duration less than or equal to the duration of one bit of the series, means to apply the positive or negative pulses from the control circuit to the input of the voltage controlled oscillator, each pulse shifting the phase of the output frequency of the oscillator by $+90°$ or $-90°$ depending on its sign, wherein the 0 bits do not generate any pulses and the 1 bits generate a positive or a negative pulse, the sign of two successive pulses being modified or not depending on the parity of the number of intermediate 0 bits.

4,210,880

MULTIPLE BRANCH-LINE WAVE GUIDE COUPLER

Jean-Pierre Boujet, Chatillon, and Jean Dietz, Villejuif, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Sep. 14, 1978, Ser. No. 942,258

Claims priority, application France, Oct. 7, 1977, 77 30274

Int. Cl.[2] H01P *1/20, 5/18*

U.S. Cl. 333—110 5 Claims

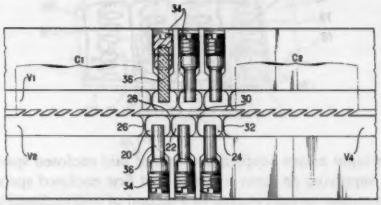
1. A multiple branch-line wave guide coupler comprising:

a first main wave guide having a rectangular cross-section with two large surfaces along two large sides of the cross-section and two small surfaces along two small sides thereof,

a second main wave guide of the same type as the first,

positioned at a distance from the first and extending parallel thereto with a large surface facing a large surface of the first, and

a plurality of coupling arms in the form of coupling wave guides with rectangular cross-sections each with a large side parallel to each other and substantially coextensive with the large sides of the cross-sections of the main wave guides, said arm extending parallel to each other between the two large surfaces which face each other of the two main wave guides and opening out at both their ends into



the two main wave guides to couple these two wave guides together,

the improvement wherein all of said coupling arms extend parallel to each other in the same direction and at an angle A of less than 90° to the direction of the main wave guides, all of said coupling arms comprising hollowed arms in a conductive surrounding material, and

said coupling arms have a cross-section, the large side of which is substantially coextensive with the large side of the main guide cross-section.

4,210,881

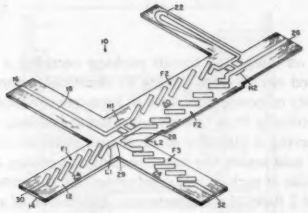
MILLIMETER WAVE MICROSTRIP TRIPLEXER

David Rubin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1978, Ser. No. 959,383

Int. Cl.² H01P *1/20, 5/18*

U.S. Cl. 333—110 **9 Claims**



1. A planar millimeter wave triplexer for separating three bands B_1, B_2 and B_3 of frequencies comprising:

a dielectric substrate having first and second surfaces;

a ground plane conductor disposed on said substrate second surface;

first means disposed on said first surface for receiving a signal including components within said three bands of frequencies;

second means disposed on said first surface and connected to said first means for separating out from said signal the component thereof in said band B_2, for providing said B_2 component at a first output and for providing at a second output the components of said signal in said bands B_1 and B_3, said second means comprising a first planar quadrature coupler coupled to said first means, first and second identical planar bandpass filter sections coupled to said first coupler, and a second planar quadrature coupler coupled to said first and second identical bandpass filter sections; and

third means disposed on said first surface and connected to said second means for separating said signal components in said bands B_1 and B_3 and for outputting a B_1 signal component output and a B_3 signal component output at third and fourth outputs, respectively.

4,210,882

DELAY NETWORK COMPRISING A CHAIN OF ALL-PASS SECTIONS

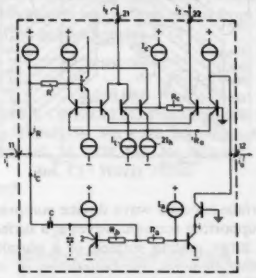
Engel Roza, and Johannes O. Voorman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,643

Claims priority, application Netherlands, Sep. 2, 1977, 7709663

Int. Cl.² H03H *7/28, 7/30, 7/10, 7/22*

U.S. Cl. 333—166 **9 Claims**



1. A Programmable filter comprising:

a chain of at least three all-pass sections having mutually substantially identical phase responses and substantially flat amplitude responses as a function of frequency at least up to a given frequency value;

tappings being provided on said chain of sections to which adjustable signals are applied and/or derived for adjusting the signal transfer characteristic of said programmable filter, said signals being adjustable with the aid of weighting factor adjusting means;

said all-pass sections being integrated on a semiconductor body;

each of said all-pass sections comprising:

a semiconductor amplifier circuit having first and second inputs and a common output;

a circuit comprising:

a resistor and a capacitor coupling an input terminal of said section to said first and second inputs in such manner that first and second signal paths having resistive and capacitive elements respectively connect said input terminal to said common output via said first and second inputs respectively;

the coupling from the input terminal of each section to the first input of the corresponding amplifier circuit including the corresponding resistor in series therewith;

the coupling from the input terminal of each section to the second input of the corresponding amplifier circuit including the corresponding capacitor in series therewith;

each amplifier circuit being inverting from one of its said inputs to its output and being non-inverting from the other of its said inputs to its output;

the input impedance of said amplifier circuit at each of its said inputs being negligibly small;

each amplifier circuit including a current mirror coupling one of its inputs to its output;

such that a signal applied to said input terminal will be split between said paths; and

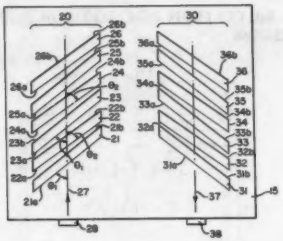
said amplifier circuit arrangement being constructed to exhibit negligible consumption of input signal power.

4,210,883

TECHNIQUE FOR WIDENING THE TEMPERATURE RANGE OF SURFACE ACOUSTIC WAVE REFLECTION ARRAY FILTERS

Manhar L. Shah, Melbourne Beach, and William D. Hunt, Palm Bay, both of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Jun. 27, 1978, Ser. No. 919,626
Int. Cl.[2] H03H *9/26, 9/32*
U.S. Cl. 333—195 **35 Claims**



1. In a surface acoustic wave device comprising a substrate capable of supporting acoustic waves at a surface thereof, and a reflective array grating formed of a plurality of acoustic wave-reflective elements, the boundaries of which elements create reflective discontinuities along the surface of said substrate, disposed at said surface of said substrate, a boundary of each element defining a respective grating angle relative to a prescribed direction of acoustic propagation,

the improvement wherein

said plurality of elements is comprised of plural sets of said elements, the elements of one of said sets having a discontinuity-creating boundary the grating angle of which differs from the grating angle of a discontinuity-creating boundary of the elements of another of said sets, and wherein the elements of said sets are interleaved with one another along said prescribed direction of acoustic propagation, so that an acoustic wave traveling along said prescribed direction encounters the boundaries of differing grating angles of each of the elements of said plural sets and thereafter repeatedly encounters the boundaries of different grating angles of each of the elements of said plural sets.

4,210,884

HELICAL RESONATOR BAND PASS FILTER WITH NOVEL COUPLING MEANS

Toshihide Tabuchi, Hirakata, and Masakatsu Tsumura, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 5, 1978, Ser. No. 912,255
Claims priority, application Japan, Jun. 3, 1977, 52-66146; Feb. 8, 1978, 53-15108
Int. Cl.[2] H01P *7/00, 5/00, 1/20*
U.S. Cl. 333—203 **11 Claims**

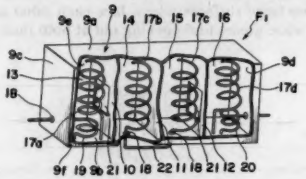
1. A band pass filter comprising in combination:

a metallic shield casing in the shape of a box-like chamber;

at least one metallic partition wall electrically connected to and disposed within said box-like chamber for dividing said box-like chamber into at least two enclosed spaces which are substantially electrically shielded from each other;

a quarter-wavelength winding, having first and second ends, disposed within each of said enclosed spaces and electrically insulated from said shield casing;

a first connecting means, electrically insulated from said shield casing, connected to said first end of each of said quarter-wavelength windings for electrically connecting said quarter-wavelength windings;



an input means coupled to a first of said enclosed spaces for supplying an input signal to said first enclosed space; and

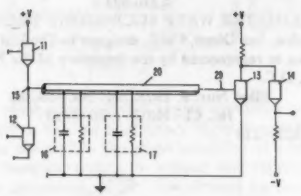
an output means coupled to a second of said enclosed spaces for producing an output signal from said second enclosed space.

4,210,885

THIN FILM LOSSY LINE FOR PREVENTING REFLECTIONS IN MICROCIRCUIT CHIP PACKAGE INTERCONNECTIONS

Chung W. Ho, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,914
Int. Cl.[2] H01P *3/08*
U.S. Cl. 333—238 **8 Claims**



1. In an integrated circuit package carrying a plurality of integrated circuit chips having an electrical ground plane and a plurality of conductors with at least one conductor connecting electrically from one circuit node to another, each of said chips having a plurality of electrical terminals connected to some of said nodes, the improvement comprising a total resistance value in each of said conductors that is greater than $\frac{1}{2}$ but less than 2 times the characteristic impedance of said conductors, and said conductors and ground plane forming lossy strip transmission lines, whereby significant attenuation of reflected signals is provided between chips.

4,210,886

ISOLATOR HAVING REACTIVE NEUTRALIZING MEANS AND PREDETERMINED ANGLE BETWEEN INPUT-OUTPUT WINDINGS

Ralph T. Enderby, and Lawrence N. Dworsky, both of Coral Springs, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 18, 1978, Ser. No. 943,077
Int. Cl.[2] H01P *1/36*
U.S. Cl. 333—24.2 **4 Claims**

1. An isolator for use in radio frequency apparatus comprising in combination:

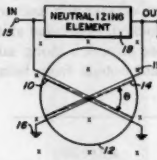
an input terminal;

an output terminal;

a reference voltage terminal;

first conductive means coupled across the input terminal and the reference voltage terminal;

second conductive means coupled across the output terminal and the reference voltage terminal, and positioned with its longitudinal axis in substantially the same plane as the longitudinal axis of the first conductive means and forming a first predetermined angle with said axis of the first conductive means, said angle having a value within one of the ranges 5° to 85° and 95° to 175°;



gyromagnetic means positioned in close proximity to the first and second conductive means with the major plane thereof parallel to the plane of the axes of said conductive means;

magnetic means for providing a substantially uniform static magnetic field and the first and second conductive means and the gyromagnetic means being positioned within and normal to said magnetic field; and

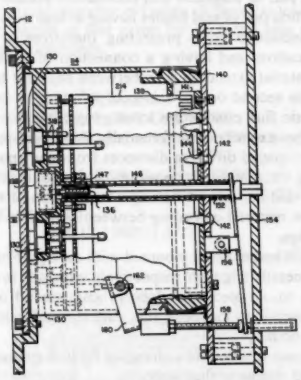
reactive neutralizing means coupled to provide minimum insertion loss at said first predetermined angle between the conductive means.

4,210,887

CIRCUIT INTERRUPTER WITH INTERLOCKED INTERCHANGEABLE TRIP UNIT

Joseph J. Matsko, Beaver; Robert H. Hill, South Beaver; Paul Skalka, Beaver, and Alfred E. Maier, Beaver Falls, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1977, Ser. No. 853,990
Int. Cl.[2] H01H *9/24;* H02H *3/08*
U.S. Cl. 335—6 **7 Claims**



1. A circuit interrupter, comprising:

a housing;

a circuit breaker mechanism disposed in said housing and comprising separable contacts, an operating mechanism responsive to manual operation to open and close said contacts, and trip means responsive to electrical operation to open said contacts;

sensing means responsive to current flow through said contacts;

an interchangeable trip unit removably disposed in said housing and electrically connected between said sensing means and said trip means, said trip unit activating said trip means to open said contacts upon detection of overload current by said sensing means; and

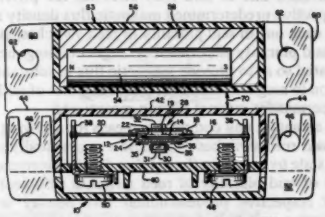
rejection means comprising a first mechanical mating member disposed in said housing and having a mechanical structure coordinated with electrical parameters of said circuit breaker mechanism and said sensing means, and a second mechanical mating member having a mechanical structure coordinated with electrical parameters of said trip unit and positioned upon said trip unit to cooperate with said first mechanical mating member to permit a trip unit having electrical parameters compatible with electrical parameters of said operating mechanism and said sensing means to be completely inserted in said housing to effect electrical connection to said sensing means and trip means, said first and second mechanical mating members cooperating to prevent a trip unit having electrical parameters not compatible with the electrical parameters of said operating mechanism and sensing means from being completely inserted in said housing.

4,210,888

MAGNETICALLY OPERATED PROXIMITY SWITCH

Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005

Filed Jul. 20, 1978, Ser. No. 926,440
Int. Cl.[2] H01H *36/00*
U.S. Cl. 335—207 **13 Claims**



1. A proximity switch device for controlling an electrical circuit in response to the presence of a magnetic field of predetermined strength, said proximity switch device comprising:

(a) a reed switch having a pair of magnetic contacts contained within an elongate capsule having a longitudinal axis, said contacts being movable relative to one another from an unactuated state to a magnetically actuated state in response to the presence of a magnetic field of at least a predetermined minimum flux density;

(b) permanent magnet means, having an axis of polarity, associated with said capsule for providing a predetermined portion of said predetermined magnetic flux density, said predetermined portion being less than the minimum required to retain said contacts in said magnetically actuated state; and

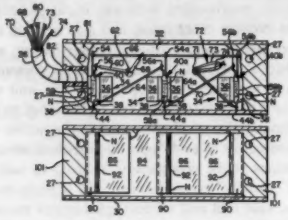
(c) magnet carrier means resiliently gripping said capsule for adjustably positioning said permanent magnet means relative to said reed switch so as to provide said predetermined portion of said predetermined magnetic field strength, said magnet carrier means including means for holding said permanent magnet means such that said axis of polarity is parallel to said longitudinal axis and said permanent magnet means is a predetermined distance from said longitudinal axis, and said magnet carrier means permitting said magnet to be moved in a longitudinal direction relative to said capsule while maintaining said predetermined distance between said permanent magnet means and said longitudinal axis.

4,210,889

MAGNETICALLY ACTUATED SENSING DEVICE

Thomas J. Holce, 10905 SW. 5th #250, Beaverton, Oreg. 97005

Filed Jul. 20, 1978, Ser. No. 926,442
Int. Cl.[2] H01H *36/00*
U.S. Cl. 335—207 10 Claims



1. A magnetically actuated sensing device for controlling an electrical circuit in a physical security monitoring system, said sensing device comprising:

(a) a switch unit having at least three electrically interconnected reed switches, each one of said reed switches being responsive to a respective predetermined magnetic flux density, presence of said respective predetermined flux density causing magnetic actuation of each respective one of said reed switches;

(b) a plurality of permanent magnet biasing means, one of said permanent magnet biasing means being located adjacent each one of said reed switches for providing said respective predetermined magnetic flux density surrounding each one of said plurality of reed switches, at least one of said plurality of permanent magnet biasing means being located so as to provide magnetic flux in substantial opposition to magnetic flux of at least one other of said plurality of permanent magnet biasing means; and

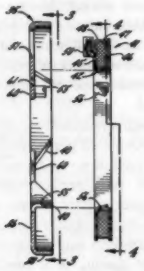
(c) an actuating unit comprising means for allowing each one of said reed switches to assume a magnetically nonactuated state by reducing the net flux density surrounding each one of said plurality of reed switches sufficiently below said respective predetermined flux density when said actuating unit is in a predetermined position relative to said switch unit.

4,210,890

FIELD ASSEMBLY FOR AN ELECTROMAGNET

Robert A. Olsen, Janesville, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Sep. 27, 1978, Ser. No. 946,114
Int. Cl.[2] H01F *3/00, 7/08*
U.S. Cl. 335—281 9 Claims



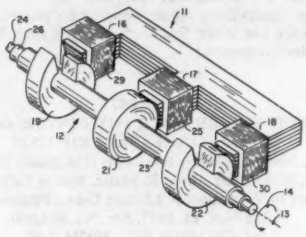
1. A field assembly for an electromagnet, said field assembly comprising a single-piece shell, said shell including a disc having a hole through the center thereof, arcuate flange means projecting axially from said disc and extending around said hole adjacent the margins thereof, said flange means defining a magnetic pole and also defining a mounting hub, said field assembly further comprising a coil assembly defined by an annular bobbin and by a multiple turn winding supported by said bobbin, said bobbin having an inner annulus telescoped over said mounting hub, said field assembly being characterized in that said shell and said bobbin are formed with coacting means which interlock with one another with a snap action when the annulus of said bobbin is telescoped over the mounting hub of said shell and is moved axially in one direction to a predetermined position on said hub, said coacting means being operable, when interlocked, to prevent axial movement of said bobbin in the opposite direction along said hub and thereby serving to prevent said bobbin from being separated axially from said shell.

4,210,891

ELECTROMAGNETIC POSITION INDICATOR/DIFFERENTIAL TRANSFORMER

Homer A. Boushey, 70 Stonegate Rd., Portola Valley, Calif. 94025

Filed Nov. 20, 1978, Ser. No. 961,983
Int. Cl.[2] H01F *21/06*
U.S. Cl. 336—135 9 Claims



1. An electromagnetic structure comprising:

A. a pair of magnetic flux conductive bodies;

B. a first one of said bodies having at least two magnetic flux conductive poles projecting therefrom at spaced apart locations and having a connection of a flux conductive material extending therebetween adjacent their bases;

C. the second one of said bodies having at least two magnetic flux conductive lobes projecting therefrom, which lobes extend circumferentially about said second one and are spaced differing distances from one another at differing circumferential positions thereabout, said second one of said bodies also having a connection of a flux conductive material extending between said lobes adjacent their bases;

D. said bodies being mounted with each pole of said first one generally alignable respectively with, and in close proximity to, an associated lobe of said second one to form a closed-loop magnetic flux path through both of said pair of bodies;

E. means to generate a changing flow of magnetic flux along said magnetic flux path;

F. means interactively associated with one of said bodies to have an electrical current generated therein proportional to the change in the amount of magnetic flux flowing at any particular time along said path; and

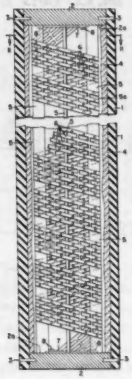
G. the position of alignment of said poles with said lobes circumferentially with respect to said lobes being changeable to vary the transverse area of magnetic material of said poles and lobes in flux conductive relationship and thereby change proportionately the amount of electrical current generated in said last mentioned means.

4,210,892

ELECTRIC FUSE HAVING HELICALLY WOUND FUSIBLE ELEMENTS

Erwin Salzer, Waban, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 12, 1979, Ser. No. 11,398
Int. Cl.² H01H *85/04*
U.S. Cl. 337—161 5 Claims



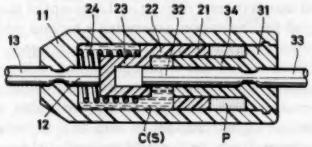
1. An electric fuse for elevated circuit voltages including a tubular casing of an electric insulating material; a pair of terminal elements closing the ends of said casing; a pulverulent arc-quenching filler inside said casing; a plurality of equidistantly spaced fusible elements electrically connected in parallel wound substantially helically in planes defining a prism and forming part of a current path conductively interconnecting said pair of terminal elements, wherein the novel feature consists in that said plurality of fusible elements are formed by a unitary metal stamping including a plurality of aligned metallic bridges interconnecting all of said plurality of fusible elements, said plurality of metallic bridges being of smaller width than each of said plurality of fusible elements and arranged in such a way that they are confined to said planes of said prism and spaced from the edges thereof, said plurality of bridges interconnecting all of said plurality of fusible elements at least once in each of said planes of said prism for each full turn of said plurality of fusible elements.

4,210,893

THERMAL CUT-OFF FUSE

Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Nov. 3, 1978, Ser. No. 957,390
Claims priority, application Japan, Nov. 4, 1977, 52-131426; Jul. 6, 1978, 53-92313[U]
Int. Cl.² H01H *37/76*
U.S. Cl. 337—407 7 Claims



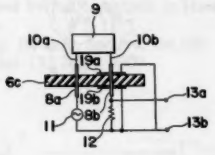
1. A thermal cut-off fuse comprising a housing, first and second lead wires extending from said housing with at least said first lead wire extending into the interior of said housing, a conductive fluid initially in contact in said interior with at least said first lead wire for completing an electrical circuit to said second lead wire, slideable means comprising an electrically insulating barrier means initially disposed at a point remote from said first lead wire, spring means which initially tends to force said slideable means toward said first lead wire and an initially solid pellet positioned so as to restrain said spring means from forcing said slideable means toward said lead wire until a predetermined temperature is reached and said pellet melts, said slideable means being constructed so that upon the melting of said pellet said barrier means is interposed relative to said first lead wire so that any conductive fluid that remains in contact with said first lead wire is completely electrically isolated from the rest of the conductive fluid in said interior of said housing by said barrier means, which breaks the electrical circuit that otherwise would be made between said first and second lead wires through said conductive fluid in the absence of said barrier means.

4,210,894

TERMINAL UNIT FOR ELECTRICAL CIRCUIT ELEMENTS AND SENSING DEVICE EMPLOYING SAID TERMINAL UNIT

Tsuneharu Nitta, Katano; Ziro Terada, Yao, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 29, 1978, Ser. No. 938,313
Claims priority, application Japan, Aug. 30, 1977, 52-104431; Apr. 13, 1978, 53-43987
Int. Cl.² H01L *7/00*
U.S. Cl. 338—35 10 Claims



1. An electrical sensing device comprising:
a grounded electrically conductive substrate having a pair of bores disposed therein;
a pair of electrically insulating members disposed in respective bores of said electrically conductive substrate;
a pair of electrically conductive terminal leads extending through respective bores of said electrically conductive substrate, and embedded in and supported by respective electrically insulating members thereby being electrically insulated from said electrically conductive substrate; and
a sensing element exposed to the atmosphere having a pair of terminals connected to respective terminal leads and having an electrical impedance which varies in response to changes in an atmospheric quantity.

4,210,895

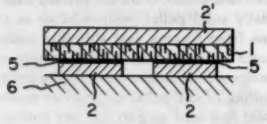
PRESSURE SENSITIVE RESISTOR ELEMENTS

Ryoichi Sado, Saitama, and Akio Nakamura, Toda, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,760
Claims priority, application Japan, Dec. 15, 1977, 52/151143
Int. Cl.² H01R *11/20*
U.S. Cl. 338—99 3 Claims

1. A pressure sensitive resistor element comprising an anisotropically electroconductive sheet formed of an electrically insulating rubbery elastomer as a matrix, said matrix including a number of electroconductive fibers dispersed and oriented in alignment in a direction substantially perpendicular to the

plane of the sheet, an electrode provided on each surface of the sheet and an insulating layer formed of an electrically insulating material interposed between at least one of the electrodes



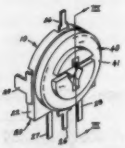
and the sheet, the insulating layer having a thickness sufficient to be insulating in the absence of, and to contribute to electric conduction in the presence of, a compressive force between the electrodes.

4,210,896

VARIABLE RESISTANCE CONTROL AND METHOD OF MAKING THE SAME

John D. Van Benthuysen, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Apr. 24, 1978, Ser. No. 899,116
Int. Cl.[2] H01C *10/00*
U.S. Cl. 338—159 **16 Claims**



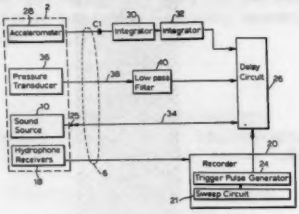
1. A variable resistance control comprising a structure plate having front and back plate surfaces and having peripheral edges and comprising a collector intermediate of the peripheral edges and having a collector surface defining a portion of the front plate surface and a center terminal integral with the structure plate, a body molded to the front plate surface and having a front body surface spaced from the front plate surface and having an opening in the front body surface exposing the collector surface, the center terminal extending outwardly from the body distal from the front body surface, a pair of end terminals embedded in the body, and having internal ends exposed on the front body surface, and having external ends projecting from the body distal from the front body surface, a resistance element arcuately disposed on the front body surface radially outward from the collector surface and electrically connected to the pair of end terminals, the resistance element being intimately bonded to the front plate surface by the body, a driver operably connected to the structure plate for rotation about an axis intermediate of and orthogonal to the arcuately disposed resistance element, and having an inner surface proximal to the front body surface, a contactor disposed intermediate the inner surface of the driver and the structure plate and drivingly connected to the driver for rotation thereby and electrically contacting the collector surface and the resistance element, and heat sink means comprising a portion of the structure plate that substantially corresponds in size and location to the resistance element for receiving and dissipating heat from the resistance element, the area of the front plate surface of the structure plate being at least as large as the area of the resistance element.

4,210,897

HEAVE COMPENSATION SYSTEM

Roger Hutchins, Toronto, Canada, assignor to Huntec (70) Limited, Scarborough, Canada

Continuation of Ser. No. 747,588, Dec. 6, 1976, Pat. No. 4,091,356. This application Mar. 3, 1978, Ser. No. 883,076
The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.
Int. Cl.[2] G01V *1/38*
U.S. Cl. 367—106 **3 Claims**



1. An underwater seismic system for producing sound signals in water and for recording echoes from the bottom beneath the surface of such water, comprising:

(1) a body adapted to travel through said water and including

(a) a sound source for generating a sound signal, said source including input trigger means responsive to a trigger pulse received thereat for generating said sound level,

(b) a receiver for receiving echoes from said bottom,

(2) a recorder connected to said receiver for recording said echoes, said recorder including repetitive sweep means, and means for generating a first start signal upon commencement of each sweep,

(3) delay means including:

(a) pressure compensation means comprising a pressure transducer located in said body for producing a pressure signal indicative of the depth of said body, said pressure signal having a steady state value when the water pressure above said body is constant and said pressure signal changing in a first sense when the water pressure above said body decreases and changing in an opposite sense from said steady state value when the water pressure above said body increases,

(b) means connected to said recorder for receiving said first start signal from said recorder,

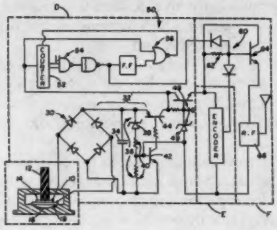
(c) means connected to said pressure compensation means for receiving said pressure signal and also connected to said means (b) and responsive to receipt of said first start signal for thereupon generating a second start signal at a time delayed from said first start signal by a time interval which has a predetermined value when said pressure signal has said steady state value and which decreases from said predetermined value when said pressure signal changes in said first sense and which increases from said predetermined value when said pressure signal changes in said opposite sense,

(d) means connecting said means (c) to said input trigger means for said second start signal to constitute said trigger pulse, so that vertical movement of said body beneath said surface of said water will cause compensating variations in the time of operation of said source.

4,210,898
LOW TIRE WARNING SYSTEM

David A. Betts, Mentor-on-the-Lake, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 30, 1979, Ser. No. 34,900
Int. Cl.[2] B60C 23/06
U.S. Cl. 340—58 11 Claims



1. A tire profile monitoring apparatus including at least one telemetry means adapted to be mounted adjacent a pneumatic tire of a vehicle, said telemetry means comprising:

transducer means for sensing an abnormal tire profile and for producing electric pulses in response to said detected abnormal profile;

accumulator means for accumulating said transducer pulses, said accumulator means operatively connected with transducer means, said accumulator means comprising counting means for counting an indicia of the number of transducer pulses received, said counting means causing an enable signal upon counting to a predetermined number;

encoder means for producing a modulating signal;

transmitting means for transmitting modulated radio signals, said transmitting means operatively connected with encoder means for receiving said modulating signal for producing modulated radio signals, said transmitting means being enabled by said enable signal, said transmitting means being operatively connected with said accumulator means for receiving said enable signal whereby said transmitting means transmits a modulated radio signal when the counting means counts the predetermined number of counts.

4,210,899
FINGERPRINT-BASED ACCESS CONTROL AND IDENTIFICATION APPARATUS

Claron W. Swonger, Elma, N.Y.; Dan M. Bowers, Fairfield, Conn., and Robert M. Stock, Severna Park, Md., assignors to Fingermatrix, Inc., North White Plains, N.Y.

Continuation of Ser. No. 589,287, Jun. 23, 1975, abandoned.
This application Nov. 25, 1977, Ser. No. 855,043
Int. Cl.[2] G06K 9/12
U.S. Cl. 340—146.3 E 4 Claims

1. Terminal means for reading fingerprints and for transmitting and receiving data and including:

(a) means for displaying information to a user;

(b) means for entering identity data;

(c) prism means having one face to be contacted by a finger of a person to be identified;

(d) photodetector means for producing an electrical output directly related to light incident thereon;

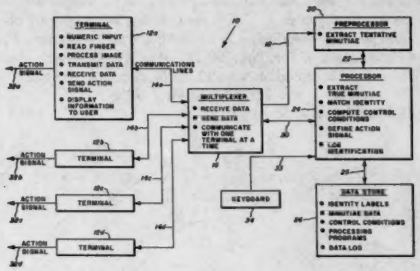
(e) means for projecting an image of a fingerprint, of a finger of the person to be identified which is in contact with said prism means, onto said photodetector means;

(f) means for moving the image of the fingerprint of the person to be identified across said photodetector means;

(g) video signal processing means for processing the electrical output of said photodetector means;

(h) means for synchronizing said means for moving an image and said video signal processing means;

(i) means for transmitting entered identity data and the processed electrical output of said photodetector means; and

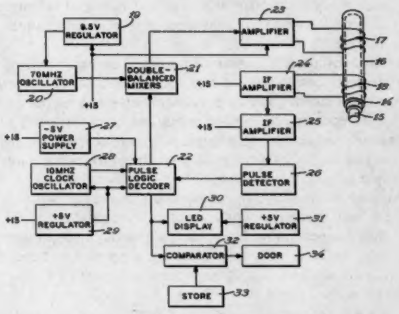


(j) means for receiving data indicating whether an identity is confirmed.

4,210,900
SURFACE ACOUSTIC WAVE CODE READER

Gideon Shavit, Highland Park, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 16, 1978, Ser. No. 934,155
Int. Cl.[2] H04Q 3/00
U.S. Cl. 340—149 R 17 Claims



1. An access control system, for permitting access to a protected area, utilizing a coded surface acoustic wave device, said system comprising:

supply means for transmitting energy;

surface acoustic wave means having energy receiving means for receiving said energy, first transducer means connected to said energy receiving means for converting said energy into surface acoustic waves, second transducer means for converting said surface acoustic waves into a coded signal, and code transmitting means connected to said second transducer means for transmitting said coded signal;

receiver means for providing an output dependent upon said coded signal; and,

output means connected to said receiver means for receiving said output to permit access to said protected area in response to a predetermined coded signal.

4,210,901

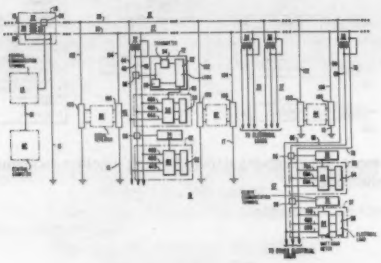
SIGNAL REPEATER FOR A DISTRIBUTION NETWORK COMMUNICATION SYSTEM

Ian A. Whyte, Churchill Boro.; Leonard C. Vercellotti, Oakmont, and James P. McGivern, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 790,227, Apr. 25, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,825

Int. Cl.[2] H04B *3/54*

U.S. Cl. 340—310 R **14 Claims**



11. A power line communication system comprising:

an electrical distribution network including primary conductors extending between a distribution substation and a plurality of distribution transformers, branch secondary conductors extending between said distribution transformers and certain electrical loads, with one of said primary and one of said secondary conductors disposed at ground potential with respect to the others of said primary and secondary conductors to form a continuous ground conductor extending between said distribution substation and each electrical load;

uniquely addressable remote communication terminals associated with certain of said electrical loads; said remote communication terminals disposed in signal communication with said ground conductor of said distribution network;

means, disposed in signal communication with one of said primary conductors of said distribution network for generating interrogation signals containing at least the address of a repeater and remote communication terminal;

each of said remote communication terminals, upon receiving an interrogation signal, providing a response signal on said ground conductor;

uniquely addressable signal repeaters associated with certain of said remote communication terminals, each of said signal repeaters including single means for receiving and single means for transmitting interrogation and response signals, each of said signal repeaters further including first and second signal couplers, said first signal coupler including a coupling capacitor and a first conductor connected to earth ground, said coupling capacitor coupling one of said other primary conductors in signal communication with said first ground conductor, said second signal coupler including a second conductor connected to earth ground and to one of said conductors at ground potential adjacent one of said distribution transformers,

first and second transformer elements associated with said first and second ground conductors, respectively, each of said first and second transformers having primary and secondary portions; said primary portion consisting of a hollow core of magnetic material disposed in inductive relation around one of said first or second ground conductors whereby a single turn primary winding is formed; said secondary portion including two wound conductors inductively coupled to said core to form first and second coupling terminations;

each of said signal repeaters including at least first and second switches, said first switch being connected to said single receiving means and said second switch being connected to said single transmitting means;

said first switch switchably disposed between said first coupling terminations of said first and second transformers, said second switch switchably disposed between said second coupling terminations of said first and second transformers;

each of said signal repeaters including switch control means for operably moving said first and second switches between said coupling terminations of said first and second transformer elements; and

each of said signal repeaters further including logic means for decoding selected bits of said interrogation and response signals and for generating, in response thereto, control signals useful in operating said switch control means,

said logic means including means for comparing the address of said signal repeater with the repeater address contained in said interrogation and response signals and for generating in response thereto, a control signal whenever said addresses match;

said switch control means being responsive to said control signal from said comparing means and having a first state wherein said first and second switches are connected to said first and second coupling terminations of said first transformer element, respectively, and a second state wherein said first and second switches are connected to said first and second coupling terminations of said second transformer element, respectively.

4,210,902

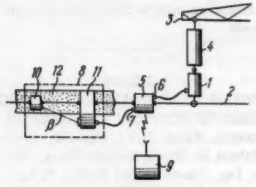
DEVICE FOR TELEMETERING LOADS ON POWER TRANSMISSION LINE CONDUCTORS

Vladimir A. Palekhin, ulitsa Chernyakhovskogo, 30, kv. 56, Smolensk; Alexandr A. Neiman, Volgogradsky prospekt, 169, kv. 10, and Veniamin G. Kagan, Golikovsky pereulok, 13, kv. 1, both of Moscow, all of U.S.S.R.

Filed Jan. 29, 1979, Ser. No. 7,258

Int. Cl.[2] G01B *15/02*; G08C *17/00*; G08B *21/00*; H02G *7/16*

U.S. Cl. 340—310 A **1 Claim**



1. A device for telemetering loads on power transmission line conductors, comprising:

a plurality of load sensors installed along a power transmission line to measure the load on the line conductors, each load sensor being fixed in place at a point of suspension of one of said line conductors to a supporting structure of said power transmission line and having an output;

a plurality of transducers converting the load sensor output signal into a high-frequency signal, the number of said transducers being equal to the number of said load sensors, each transducer shaping and transmitting a high-frequency signal, and having two inputs, a first of said inputs being connected to the output of a respective load sensor;

sources of power for said transducers;

a plurality of ice load sensors mounted along said power transmission line, each ice load sensor being attached to said line conductor and having an output connected to a second of said inputs of a respective transducer, said ice load sensors producing an output signal in proportion to

the thickness of the ice layer accumulated on said line conductor;

sources of radioactive radiation mounted on said line conductor, each source of radioactive radiation being mounted in relation to a respective ice load sensor;

a detector of radioactive radiation mounted on said line conductor in the path of the radiation from a respective source of radioactive radiation; and

a high-frequency signal receiver receiving the signals of said transducers.

4,210,903

METHOD FOR PRODUCING ANALOG-TO-DIGITAL CONVERSIONS

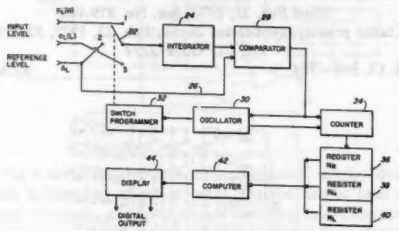
Paul J. LaBrie, Salem, Mass., assignor to Semiconductor Circuits, Inc., Haverhill, Mass.

Continuation of Ser. No. 654,298, Feb. 2, 1976, Pat. No. 4,110,747. This application Jun. 21, 1978, Ser. No. 917,464

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 NT **2 Claims**



1. A method of converting an unknown analog electronic signal having high and low levels to a digital electronic signal representing a digital measurement of said unknown analog signal, comprising the steps of:

(a) electronically combining three different pairs of analog signals, a first pair comprised of the unknown high analog signal and a known reference signal, a second pair comprised of the unknown low analog signal and the known reference signal, and a third pair comprised of the known reference signal and the known reference signal;

(b) alternately switching electronically each signal of each pair in a predetermined pair sequence to an integrator for equal predetermined time periods;

(c) electronically comparing the amplitude of each pair for equality with the amplitude of said known reference signal;

(d) registering a count representing the integration time required to reach amplitude equality for each of said pairs, said counts defining three points on a straight line; and

(e) electronically generating a digital signal related to the number of counts registered for each said pair, said digital signal representing said unknown analog signal in digital form.

4,210,904

METHOD AND APPARATUS FOR CONVERTING ANALOG ULTRASONIC ECHO SIGNALS INTO DIGITAL FORM

Peter Renzel, Duren, and Werner Vermoehlen, Elsdorf, both of Fed. Rep. of Germany, assignors to Krautkramer-Branson, Incorporated, Stratford, Conn.

Filed Sep. 12, 1978, Ser. No. 941,378

Int. Cl.[2] H03K *13/02*

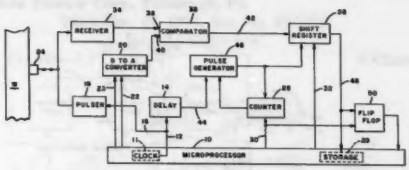
U.S. Cl. 340—347 AD **19 Claims**

1. A method for processing and storing an echo signal in pulse-echo ultrasonic testing comprising the steps of:

cyclically transmitting ultrasonic search signal into a workpiece;

receiving corresponding ultrasonic echo signals, each echo signal being responsive to a respective search signal intercepting an acoustic discontinuity in the workpiece and converting each such echo signal into an electrical analog echo signal;

generating a reference signal and varying the amplitude level of said reference signal from an initial value by a predetermined increment concomitantly with each cyclically transmitted ultrasonic search signal until a predetermined condition is reached;



providing a signal indicative of a gated time interval commencing a predetermined time after transmitting each search signal and terminating after a predetermined quantity of time increments occurs;

comparing the amplitude of a cyclically received analog echo signal with the amplitude level of a respective reference signal and generating a digital signal responsive to the amplitude of said electrical analog signal exceeding or failing to exceed the amplitude level of said reference signal at predetermined time increments during a gated time interval, and

storing said digital signals so generated in time increment responsive relation.

4,210,905

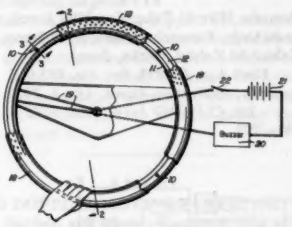
ALARM FOR WAKING A DOZING DRIVER

David A. Coons, 753 E. 1825 South, Bountiful, Utah 84010

Filed Jul. 21, 1978, Ser. No. 926,843

Int. Cl.[2] G08B *21/00*; B60Q *5/00*

U.S. Cl. 340—575 **9 Claims**



1. An alarm for waking a dozing driver of a vehicle having a steering wheel, comprising in combination with such steering wheel a plurality of electrical switches arranged about the periphery thereof on the side of the steering wheel facing the driver; a rigid ring member of diameter substantially equal to the diameter of the steering wheel extending continuously about said periphery in juxtaposition with said plurality of switches and resiliently attached to said steering wheel so as to be positioned between the steering wheel and the driver, said rigid member being operatively arranged with respect to the plurality of switches so that a normal grasp of the steering wheel will cause said rigid member to be displaced toward the steering wheel and at least one switch of the plurality of switches to change from its normal position; alarm means electrically connected to said plurality of switches so that an alarm is given if all switches of the plurality are in their normal

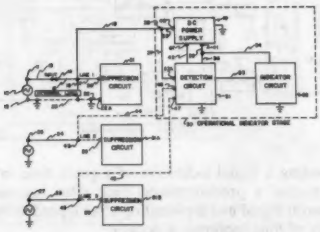
position; and means to supply power to the switches and the alarm means.

4,210,906

TRANSIENT SUPPRESSION AND DETECTION SYSTEM WITH OPERATIONAL INDICATOR MEANS

Jennings T. Smith, 2929 W. 11400 South, and George L. LeBaron, 3068 W. 10755 South, both of South Jordan, Utah 84065

Filed Nov. 20, 1978, Ser. No. 961,859
Int. Cl.² H02H 3/22
U.S. Cl. 340—659 **14 Claims**



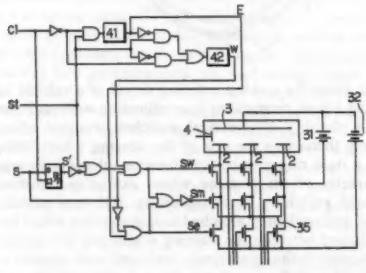
1. An on-line dynamically operating transient suppression and detection system including, in combination, a pair of input terminals constructed for coupling to a desired load and also to a power distribution circuit; means coupled to said input terminals for suppressing and dissipating transient energies appearing across said input terminals; means coupled to said input terminals for automatically detecting possible transient presence thereat should said suppressing and dissipating means fail to operate; and means coupled to said detecting means for indicating the operationally effective status of said transient suppressing and dissipating means as reflected in said detecting means.

4,210,907

UNIFORM COLORATION CONTROL IN AN ELECTROCHROMIC DISPLAY OF THE SEGMENTED TYPE

Hiroshi Hamada; Hiroshi Take; Yasuhiko Inami, all of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1978, Ser. No. 893,513
Claims priority, application Japan, Apr. 4, 1977, 52-38631
Int. Cl.² G06F 3/14; G09F 9/32
U.S. Cl. 340—785 **8 Claims**



1. In a drive system for driving an electrochromic display cell during a coloration period, and a bleaching period, said display cell having a memory period when said drive system is not driving said electrochromic display cell, said drive system including an external power source, said cell including an electrochromic material and a predetermined number of display electrodes, different combinations of said display electrodes defining different desired display patterns, said drive system comprising:

coloration means for conducting coloration operations by applying a coloration voltage to selected ones of said display electrodes during said coloration period; and

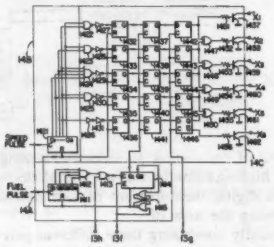
communication means responsive to the absence of the conducting of said coloration operations to said selected ones of said display electrodes by said coloration means for electrically connecting said selected ones of said display electrodes together during said memory period, said external power source being disconnected from said selected ones of said display electrodes during said memory period, thereby maintaining the degree of coloration of the selected ones of said display electrodes uniform.

4,210,908

TWO-DIMENSIONAL DISPLAY APPARATUS FOR AN AUTOMOBILE

Yasuyuki Sakakibara, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 21, 1978, Ser. No. 879,496
Claims priority, application Japan, Feb. 23, 1977, 52-21707
Int. Cl.² G06F 3/14
U.S. Cl. 340—754 **6 Claims**



1. A two-dimensional display apparatus for a vehicle for displaying two-dimensionally on a plane the correlation between two parameters which vary in association with the running of the automobile, comprising:

a display including a plurality of discrete, direct current light-emitting elements having opposite polarity terminals and being arranged as a matrix in rows and columns on a plane, each of said light-emitting elements being adapted to be lighted by being fed with a direct current and having a polarity of current flow, and a plurality of first electrical conductors and a plurality of second electrical conductors connected to the terminals of said light-emitting elements so that the terminals of one polarity of the elements for each row are connected by a respective first conductor and the terminals of the other polarity of the elements for each column are connected by a respective second conductor,

a first signal generating circuit for generating first signals related to said first parameter of said vehicle and having a plurality of output terminals for coupling said first signals respectively with said first conductors corresponding to the rows of said light-emitting elements in said display for selectively energizing a particular row responsive to the value of said first parameter, and

a second signal generating circuit for generating second signals related to said second parameter of said vehicle and having a plurality of output terminals for coupling said second signals respectively with said second conductors corresponding to the columns of the light-emitting elements in said display for selectively energizing a partic-

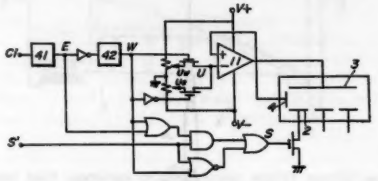
ular column responsive to the value of said second parameter; whereby light can only result from the single light-emitting element which is at the crossing point of the row and column respectively energized by said first and second signals from said first and second signal generating circuits for indicating a particular correlation between said parameters.

4,210,909

COMPLETE BLEACHING OF NON-SELECTED DISPLAY ELECTRODES IN AN ELECTROCHROMIC DISPLAY DRIVE

Hiroshi Hamada; Hiroshi Take; Yasuhiko Inami, all of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1978, Ser. No. 896,591
Claims priority, application Japan, Apr. 20, 1977, 52/46097
Int. Cl.² G09F 9/32; G06F 3/14
U.S. Cl. 340—763 **13 Claims**



1. In a drive system for an electrochromic display device which includes an electrochromic material and at least one display electrode, said drive system including coloration means for conducting a coloration operation to said display electrode thereby coloring said display electrode for a predetermined period of time, and bleaching means for conducting a bleaching operation to said display electrode thereby bleaching said display electrode, said drive system further comprising:

holding means for maintaining conduction of said bleaching operation to said display electrode when said display electrode is not being colored, said holding means maintaining conduction of said bleaching operation until the coloration operation is conducted to said display electrode.

4,210,910

DECODER FOR A SPACE RETRODIRECTIVE ARRAY

Robert J. Wohlers, Orchard Park, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,443
Int. Cl.² G01S 7/02
U.S. Cl. 343—7.6 **5 Claims**

1. A method for extracting information contained in a time-frequency code superimposed on radar signals of an inquiry radar including the steps of:

receiving radar return signals containing a time-frequency code;

separating the received radar return signals into their component bands;

determining the presence of a predetermined number of component bands in a predetermined range of frequencies; and

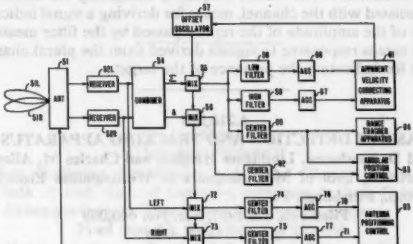
producing an output containing the extracted time-frequency code when a predetermined number of channels are present in the received signal.

4,210,911

METHOD FOR DECREASING MINIMUM OBSERVABLE VELOCITY OF MOVING TARGETS

Omar J. Jacomini, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 19, 1977, Ser. No. 861,819
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **6 Claims**



1. A method of decreasing the minimum velocity of a moving target observable by an airborne radar system comprising

transmitting a radar beam from the airborne radar system toward the earth;

receiving radar echoes having different doppler frequency shifts corresponding to the apparent velocity of target, clutter, and objects in a plurality of overlapping beams having crossover points of less than 3 decibels, to compensate for decreased single beam two way gains when detecting slow moving targets off boresite;

scanning away from potential targets to improve detection of slow moving targets;

rejecting the echoes having a doppler frequency shift corresponding to the apparent velocity of stationary targets and clutter at maximum amplitude in each beam; and

detecting the echoes including the echoes from slow moving targets having a doppler frequency shift corresponding to targets having an apparent velocity greater than the stationary ground clutter.

4,210,912

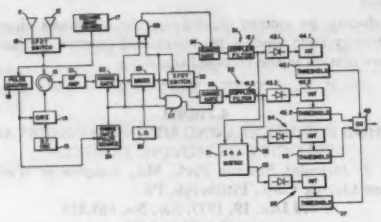
PULSED DOPPLER MOVING TARGET DETECTOR

Herbert H. Naidich, and John E. Westmark, both of Cincinnati, Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Mar. 16, 1978, Ser. No. 887,670
Int. Cl.² G01S 9/42
U.S. Cl. 343—7.7 **13 Claims**

2. A pulsed doppler radar for detecting a moving target comprising a plurality of antennae with patterns covering differing spatial regions, means for applying pulses having a common predetermined carrier frequency to the antennae in sequence so that pulses are never simultaneously applied to adjacent antennae, the energy from the pulses incident on the moving target being reflected back toward the antennae with a shift in carrier frequency, a plurality of signal processing channels, one for each of the antennae, each of said channels being responsive to reflected energy from the target transduced by the transducer associated with the channel, said channels being

activated in synchronism with the sequentially energized antennae so that each channel is responsive to the reflected energy at differing times, each of said channels including filter means for passing a replica of the shifted carrier frequency to



the exclusion of the carrier frequency energizing the antenna associated with the channel, means for deriving a signal indicative of the amplitude of the replica passed by the filter means, and means responsive to signals derived from the plural channels for indicating the presence of the target.

4,210,913

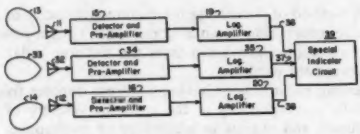
PASSIVE DETECTION AND TRACKING APPARATUS

Paul D. Newhouse, Linthicum Heights, and Charles M. Allen, Arbutus, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 13, 1957, Ser. No. 640,050

Int. Cl.[2] G01S *3/28*

U.S. Cl. 343—123 **14 Claims**



1. In passive detection and tracking apparatus, in combination, a plurality of directional signal obtaining means for obtaining from radiant energy received from the same source a plurality of signals which vary in predetermined manners with variations in the direction from the passive detection and tracking apparatus to said source, gating means operatively connected to said plurality of signal obtaining means, and indicator means operatively connected to said gating means, said gating means being constructed and arranged to pass to the indicator means certains signals only while said plurality of signals have preselected relative characteristics with respect to each other, said indicator means being constructed and arranged to utilize the passed signals to provide an indication of the direction to said source.

4,210,914

ROD ANTENNA WITH LOADING COIL AND QUICK-CONNECT COUPLING ASSEMBLY

Cornelius P. Blackman, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Jul. 29, 1977, Ser. No. 820,144

Int. Cl.[2] H01Q *1/32*

U.S. Cl. 343—715 **8 Claims**

1. An apparatus for use in sending and/or receiving radio frequency electrical signals, said apparatus comprising a base having a conductor element, an antenna, loading coil means connected to one end of said antenna for increasing the effective electrical length of said antenna, and a quick-connective coupling assembly interconnecting said base and said loading coil means, said quick-connective coupling assembly including plug and socket assemblies connected with said base and loading coil means, said socket assembly including surface means for defining a chamber to telescopically receive at least a portion of said plug assembly and retaining means for holding said plug and socket assemblies against axial movement relative to each other, said plug assembly including first conductor means having first and second end portions, said first end portion being disposed in engagement with said conductor element to provide for the conduction of radio frequency electrical signals between said plug assembly and base, a plug body circumscribing said first conductor means, and electrically insulating material disposed between said first conductor means and said plug body, said electrically insulating material having an end surface which cooperates with an end surface of said plug body and an end surface of said second end portion of said first conductor means to form a smooth end portion of said plug assembly to retard the accumulation of foreign materials on the end portion of said plug assembly, said socket assembly including second conductor means having a first end portion

disposed in engagement with said end surface of said second end portion of said first conductor means to provide for the conduction of radio frequency electrical signals between said first and second conductor means, said second conductor means having a second end portion disposed in engagement with said loading coil means to provide for the conduction of radio frequency electrical signals between said second conductor means and said loading coil means, a socket body circumscribing said second conductor means, and electrically insulating material disposed between said second conductor means and said socket body, said second conductor means including a first conductor member which is movable relative to said socket housing and a second conductor member which is fixedly connected with said socket housing and is connected with said first conductor member, said first end portion of said second conductor means being disposed on said first conductor member, said second end portion of said second conductor means being disposed on said second conductor member.

4,210,915

MICROWAVE ANTENNA WITH EXPONENTIALLY EXPANDING HORN STRUCTURE

Karl-Heinz Kienberger, Schopfheim-Wiechs, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,367

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 2744841

Int. Cl.[2] H01Q *13/02*

U.S. Cl. 343—786 **8 Claims**

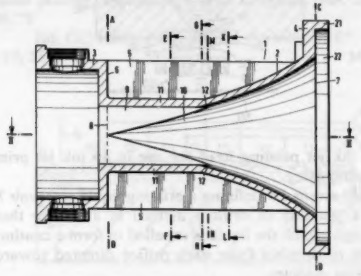
1. A micro-wave, horn-type antenna having a longitudinal axis, said antenna comprising

an outlet portion having a circular inlet opening and a circular outlet opening, the diameter of the outlet portion decreasing exponentially along said longitudinal axis from

said circular outlet opening to the circular inlet opening; and

a transition portion having a rectangular inlet opening and a circular outlet opening which coincides with the circular inlet opening of the outlet portion,

each cross-section of said transition region in a plane perpendicular to said longitudinal axis following the outline of a circle obtained by exponentially decreasing the diameter of said circular outlet opening thereof to the plane of said cross-section in accordance with the same rate of exponential decrease which occurs between said circular outlet



and inlet openings of the output region insofar as the circular outline lies outside of a projection of said rectangular inlet opening onto the plane of said cross-section, the remainder of said outline comprising said projection of the rectangular inlet opening, said circular outlet portion of the transition region circumscribing a projection of the rectangular inlet opening onto the plane containing the last-mentioned circular outlet opening; and

said rectangular inlet opening inscribing an imaginary circle obtained by decreasing the diameter of said circular outline to the plane of said rectangular outlet opening at said same rate of exponential decrease.

4,210,916

INK JET INKS

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 5, 1979, Ser. No. 17,709

Int. Cl.[2] C09D *11/02*

U.S. Cl. 346—1.1 **3 Claims**

1. In a process for information recording comprising producing a fine jet of colored aqueous liquid, directing the jet of colored liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, the improvement comprising the step of adding a humectant at least one mono alkene diol.

4,210,917

MULTICOLOR MULTIPOINT RECORDER

Charles E. Lane, III, Meadowbrook, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 928,849, Jul. 28, 1978. This application Mar. 28, 1979, Ser. No. 24,547

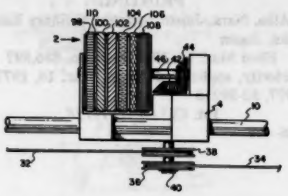
Int. Cl.[2] G01D *9/00, 9/28, 13/02*; B41J *27/00*

U.S. Cl. 346—34 **6 Claims**

1. A multicolor ink cartridge comprising:

a support shaft,

a plurality of parallel ink containing layers attached to said shaft, and



a plurality of ink impervious layers attached to said shaft for separating adjacent ones of said ink containing layer.

4,210,918

INK JET PRINTER

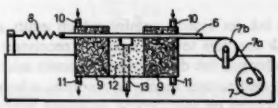
Klaus Hoffmann, Leverkusen, and Detlef Döppner, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,486

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1976, 2657360

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **3 Claims**



1. An apparatus for recording information in the form of symbols by issuing from a nozzle a jet of fine ink droplets under high pressure having a rapidly drying solvent, a recording support for receiving said jet, a collecting apparatus provided with a receiving surface arranged intermediate said nozzle and said recording support, means for charging the droplets with an electrical charge and deflecting the charged particles in a field and in accordance with said charge to cause the charged particles to selectively impinge on the recording support or on the collecting apparatus, wherein the collecting apparatus comprises in combination;

a separating member having a surface capable of receiving said ink droplets and a knife edge defined by one edge of said surface,

a porous extraction member adjacent to the knife-edged separating member,

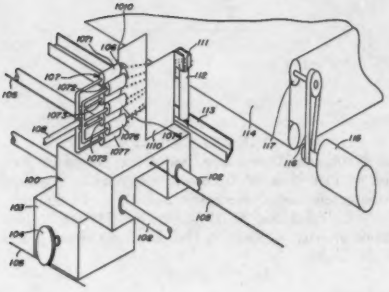
at least two spaced porous cleaning devices bearing against the separating member,

means supplying a cleaning solvent to said cleaning devices, said cleaning devices being capable of removing ink from the knife edge and the receiving surface and means for moving the separating member laterally across both said porous extraction member and said spaced cleaning devices to continuously provide said knife edge and said receiving surface adjacent said extraction member free of an accumulation of the ink.

4,210,919
INK JET SYSTEM PRINTER INCLUDING PLURAL INK DROPLET ISSUANCE UNITS FOR ONE COLUMN PRINTING

Masahiko Aiba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1978, Ser. No. 886,597
Claims priority, application Japan, Mar. 14, 1977, 52-28197; May 20, 1977, 52-59215
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 9 Claims



1. In an ink jet system printer which emits a plurality of charged ink droplets toward a record receiving medium, deflects said charged ink droplets and deposits said deflected ink droplets on said record receiving medium, whereby a desired pattern is printed on said record receiving medium in accordance with a predetermined set of print data information in a dot matrix fashion yielding a dot matrix pattern, the improvement comprising:

a plurality of discrete ink droplet issuance units;

emitting means for emitting said plurality of ink droplets in corresponding streams from each of said ink droplet issuance units, said emitting means including adjustable means and being responsive thereto for simultaneously forming ink droplets at each of said respective ink droplet issuance units and simultaneously emitting each of said ink droplets therefrom to maintain corresponding ink droplets in said streams substantially in phase with one another;

each of said ink droplet issuance units including a charging means for selectively charging some of said plurality of ink droplets in accordance with said print data information;

said charging means charging each selected one of said plurality of ink droplets immediately upon the simultaneous and in phase formation of each of said ink droplets at each of said respective ink droplet issuance units;

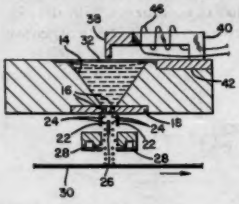
a deflecting means for deflecting each of said charged ink droplets emitted from each of said ink droplet issuance units in a predetermined direction; and

a beam gutter for collecting each of said ink droplets not charged by said charging means, one column of said dot matrix pattern being printed at a time by said selectively charged plurality of ink droplets emitted from said plurality of discrete ink droplet issuance units.

4,210,920
MAGNETICALLY ACTIVATED PLANE WAVE STIMULATOR

James E. Burnett, Xenia, and E. J. Doyle Kenworthy, Dayton, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 31, 1979, Ser. No. 7,921
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—75 18 Claims



1. An ink jet printing head for use in an ink jet printing device, comprising:

manifold means for defining a printing liquid reservoir having a plurality of orifices defined in a surface thereof through which the liquid is expelled to form a continuous series of droplets from each orifice directed towards a printing medium;

magnetically active diaphragm means communicating with said reservoir remote from said orifices;

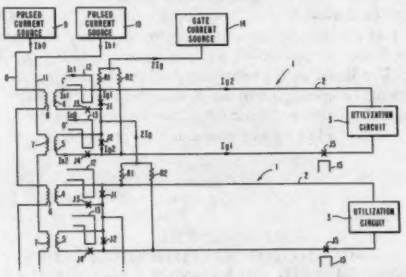
electromagnetic means having a portion coupled to said diaphragm means to form a magnetic flux path therethrough and another portion disposed adjacent said diaphragm means such that said other portion and said diaphragm means form opposite poles of an electromagnet; and

signal generating means for imposing an alternating electric current on said electromagnetic means thereby causing said diaphragm means to vibrate so as to stimulate said drops at a desired frequency.

4,210,921
POLARITY SWITCH INCORPORATING JOSEPHSON DEVICES

Sadeg M. Faris, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1978, Ser. No. 920,911
Int. Cl.[2] H01L *39/22*
U.S. Cl. 357—5 18 Claims



1. A Josephson junction polarity reversing circuit comprising:

a pair of Josephson devices,

means connected to each of said devices for applying a given value of gate current to each of said pair of devices,

interconnection means connected to said pair of devices, and

means connected to said pair of devices for applying opposite polarity currents of at most said given value of gate current to said interconnection means.

4,210,922

CHARGE COUPLED IMAGING DEVICE HAVING SELECTIVE WAVELENGTH SENSITIVITY

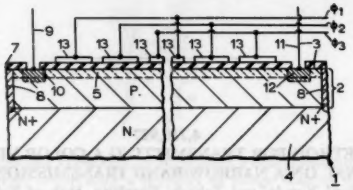
John M. Shannon, Whyteleafe, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 745,477, Nov. 26, 1976, abandoned. This application Jun. 22, 1978, Ser. No. 917,848

Claims priority, application United Kingdom, Nov. 28, 1975, 49089/75

Int. Cl.² H01L *29/78, 27/14, 31/00, 29/167*

U.S. Cl. 357—24 **14 Claims**



1. A charge coupled device for converting an electromagnetic radiation pattern in a certain wavelength range into electrical signals comprising means for reading charge and a semiconductor body having a semiconductor layer of one conductivity type in which pattern information in the form of discrete packets of majority charge carriers can be generated and transported via the interior of the semiconductor layer to said means for reading the charge, the layer comprising a concentration of at least one shallow level doping impurity characteristic of the one conductivity type and a concentration of at least one deep level doping impurity which provides deep level centers for trapping majority charge carriers which can be released upon excitation by radiation in said wavelength range, said shallow level doping impurity concentration and the deep level doping impurity concentration being such that depletion regions can be formed extending through the thickness of the layer while avoiding breakdown only as a result of substantially all the deep level centers within the depletion regions being full of majority charge carriers characteristic of the one conductivity type, and the deep level doping impurity concentration being formed by defects introduced into the crystal lattice of at least part of the layer of the one conductivity type.

4,210,923

EDGE ILLUMINATED PHOTODETECTOR WITH OPTICAL FIBER ALIGNMENT

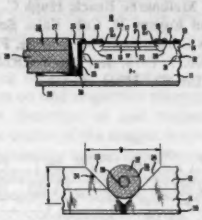
James C. North, New Providence, and David P. Schinke, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 2, 1979, Ser. No. 71

Int. Cl.² H01L *27/14*

U.S. Cl. 357—30 **9 Claims**

1. A semiconductor device for detection of incident light comprising a body of silicon (11 and 12) with two major surfaces and means (22 and 29) formed in said body responsive to light which is incident thereon essentially parallel to said major surfaces characterized in that the major surfaces lie in the (110) plane and a portion of the semiconductor body defines a groove (23) adjacent to said light responsive means, said groove having sloping sidewalls (24) lying in (111) planes



suitable for placing an optical fiber in the groove aligned with the area under said light responsive means.

4,210,924

SEMICONDUCTOR CONTROLLED RECTIFIER WITH CONFIGURED CATHODE TO ELIMINATE HOT-SPOTS

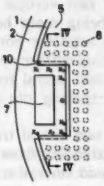
Katsumi Akabane; Isao Kojima; Yoshikazu Takita; Soushi Suzuki; Yasuhiko Ikeda; Koichi Wajima, all of Hitachi, and Yoshio Terasawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 12, 1978, Ser. No. 941,588

Claims priority, application Japan, Sep. 14, 1977, 52-109922

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **11 Claims**



1. A semiconductor controlled rectifier comprising:

(a) a semiconductor substrate having first, second, third and fourth layers of alternatively different conductivity types and having a pair of main surfaces on the opposite sides of said substrate, one of said main surfaces being formed of the exposed surfaces of at least said first and second layers and the other main surface being formed of the exposed surface of at least said fourth layer;

(b) a gate electrode provided in ohmic contact with said second layer on said one main surface and being of a shape having a relatively long side and a relatively short side;

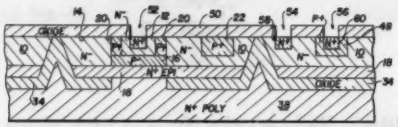
(c) a cathode electrode provided in ohmic contact with said first layer on said one main surface and disposed adjacent to and spaced apart from said gate electrode, said cathode electrode having a first portion extending along the short side of said gate electrode and a second portion extending along the long side of said gate electrode, said first portion of said cathode electrode being formed to extend toward said gate electrode a p-n junction defined between said first layer extending along said first portion of the cathode electrode and said second layer so as to be in ohmic contact with said second layer to short circuit the gate electrode to the cathode electrode along the short side of the gate electrode when firing of the semiconductor control rectifier occurs so that said firing will take place between the long side of the gate electrode and the second portion of the cathode electrode; and

(d) an anode electrode provided in ohmic contact with said fourth layer on said other main surface.

4,210,925
I²L INTEGRATED CIRCUIT AND PROCESS OF FABRICATION

William R. Morcom, Melbourne Beach; Hugh C. Nicolay, Melbourne Village, and Eugene R. Cox, Palm Bay, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Feb. 7, 1978, Ser. No. 875,824
Int. Cl.² H01L 27/02
U.S. Cl. 357—46 18 Claims



1. A complementary pair of bipolar transistors including a vertical and a lateral transistor comprising:

a substrate of a first conductivity type having separate portions forming the base of said lateral transistor and collector of said vertical transistor;

an epitaxial emitter region of said vertical transistor of said first conductivity type at a first surface of and distinct from said substrate;

a base region of said vertical transistor of a second conductivity type opposite said first conductivity type extending into said substrate from said first surface and said epitaxial emitter region;

a collector region of said vertical transistor of said first conductivity type being more heavily doped than and extending into said substrate portion which forms said collector from a second surface opposite said first surface;

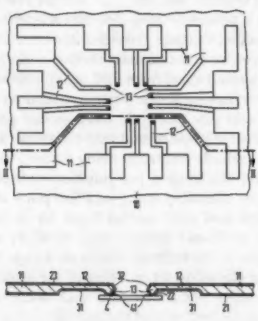
an emitter region of said lateral transistor of said second conductivity type extending into said substrate from said second surface; and

a collector region of said lateral transistor of said second conductivity type extending from said second surface to said base region of said vertical transistor.

4,210,926
INTERMEDIATE MEMBER FOR MOUNTING AND CONTACTING A SEMICONDUCTOR BODY

Hans J. Hacke, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 858,395, Dec. 7, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,235
Int. Cl.² H01L 23/48, 29/44, 29/52
U.S. Cl. 357—70 7 Claims



1. An intermediate member system for mounting and contacting a semiconductor body, comprising:

a semiconductor body having thin electrodes, said electrodes having a height above a top surface of the semiconductor body which provides insufficient clearance to permit direct lateral contacting;

self-supporting metal contact fingers which each have an outer contact and an inner contact, each inner contact connecting by solder with one of said semiconductor body electrodes, each of the inner contacts being provided as an integral raised projection with respect to adjacent bordering portions of the fingers and formed by a depression in the fingers, a height of said projection being sufficient to prevent contact between said adjacent bordering portions of the finger and the top surface of the semiconductor body, a connection facing surface of the inner contact not overlapping the electrode of the semiconductor body;

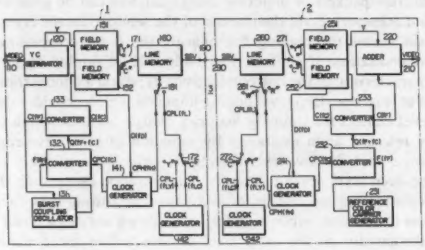
support frame means connecting to said outer contacts;

and a solder repelling layer provided in said depression and adjacent to each inner contact connection with the semiconductor electrode.

4,210,927
METHOD FOR TRANSMITTING A COLOR VIDEO SIGNAL ON A NARROW-BAND TRANSMISSION LINE

Yasufumi Yumde, and Takashi Furuhata, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed May 8, 1978, Ser. No. 903,609
Claims priority, application Japan, May 11, 1977, 52-53090
Int. Cl.² H04N 9/32
U.S. Cl. 358—12 14 Claims



1. A method for transmitting a color video signal by a color video signal transmission system over a narrow-band transmission line comprising means for storing an input color video signal in a memory, means for reading said color video signal in the form of a time-divided luminance signal Y and a carrier chrominance signal C, at a speed different from the storing speed, to transmit the luminance signal Y and the chrominance signal C in a narrow band, and a group of clock pulse generating means for driving said memory and the reading means; comprising the steps of

storing said color video signal in said memory with a write clock having a frequency f_H sufficiently high to store a predetermined band of the Y signal in the form of picture elements, while said C signal is rendered a multiple signal which is produced by a quadrature modulation of a carrier of a frequency 1/m·n of the write clock frequency f_H (m being a given number, and n an integer not less than 1) in advance of said storing; and

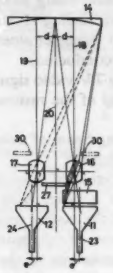
reading said video signal from said memory by a read clock signal of a frequency f_L sufficiently low to transmit said Y signal in a band of the transmission line which is narrower than the band of the input color video signal.

4,210,928

PROJECTING APPARATUS

Masayuki Ohmori, and Norio Ito, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 903,002, May 4, 1978, abandoned. This application Dec. 27, 1978, Ser. No. 973,581
Claims priority, application Japan, May 9, 1977, 52-52883
Int. Cl.² H04N 9/31
U.S. Cl. 358—60 **10 Claims**



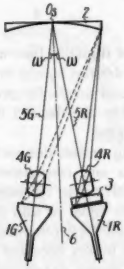
1. A projecting apparatus for projecting a compound image onto a screen; comprising a plurality of image sources each providing a respective plane image with each of the image sources having a central axis normal to the plane of the image thereof; plural focusing means for projecting said images in respective optical paths onto said screen to form said compound image, said focusing means having respective principal axes which are arranged substantially parallel to one another, at least one of said focusing means being arranged with the principal axis thereof epaxially displaced with respect to the central axis of a respective one of said plurality of image sources so that the projected images are made to coincide with each other on said screen; and intercepting means interposed in at least one of said optical paths between said image sources and said screen to intercept a portion of the light emitted by at least one of said image sources so as to compensate for unevenness of distribution of brightness in the projected images.

4,210,929

VIDEO PROJECTING APPARATUS WITH RASTER DISTORTION CORRECTION

Kazuhiko Takabayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,731
Claims priority, application Japan, Aug. 30, 1977, 52-103998
Int. Cl.² H04N 9/16
U.S. Cl. 358—64 **4 Claims**



1. A video projecting apparatus for projecting a compound color image onto a projection screen comprising:

a plurality of color cathode ray tubes, each of said cathode ray tubes having a phosphor screen for producing a color image, each of said color images being of a different color;

a plurality of projecting means for projecting said color images on said projection screen with predetermined elevation and horizontal deflection angles; and

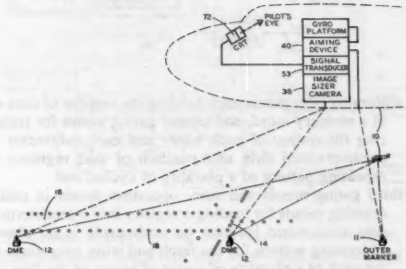
a pre-distorting means for distorting raster shapes of said color images on said respective phosphor screens to compensate for distortion of said projected color images, wherein the center of the longest horizontal scanning line of each of said color images coincides with the center of a respective horizontal line of the respective one of said phosphor screens of said color cathode ray tubes.

4,210,930

APPROACH SYSTEM WITH SIMULATED DISPLAY OF RUNWAY LIGHTS AND GLIDE SLOPE INDICATOR

Richard D. Henry, R.D. #1, Clinton, Pa. 15026

Filed Nov. 18, 1977, Ser. No. 852,961
Int. Cl.² H04N 7/18
U.S. Cl. 358—103 **18 Claims**



1. In combination with an improved landing system for blind flight approaches, during which landing lights are nonvisible;

an airborne navigational device for assisting in landing operations by locating runway and approach landing operations, comprising a plurality of microwave emitters disposed at spaced locations along the length of a runway and at approximately the same locations as the runway lights thereon, a reflector associated one with each of said microwave emitters and reflecting such wave energy in opposite directions corresponding to the opposite ends of said runway, airborne camera means adapted to produce an image responsively to the microwave frequency received from said on-ground reflector means, gyroscopic mean for mounting said airborne camera to provide a display which is independent of the orientation of the aircraft, means for converting the image provided by said camera to a transmittable electrical signal form, and a display tube coupled with said camera and receiving said electrical signal to provide a visual readout of the runway as a series of lights which correspond to runway lights that would normally appear as visible lights under favorable weather conditions.

4,210,931

VIDEO PLAYER AND/OR RECORDER WITH HADAMARD TRANSFORM

Jack H. Bailey, Millbrook, and Gerald H. Ottaway, Pleasant Valley, both of N.Y., assignors to DiscoVision Associates, Los Angeles, Calif.

Filed Dec. 28, 1978, Ser. No. 973,839
Int. Cl.² H04N 5/79
U.S. Cl. 358—128.5 **5 Claims**

1. In a video player or recorder apparatus, a processor for a Hadamard transform of picture information, comprising,

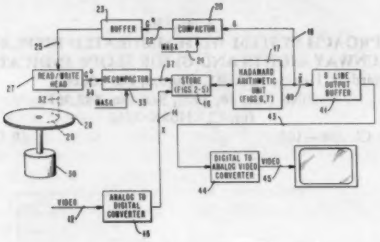
a data store having data accessible in a memory word comprising a predetermined number of data units,

an arithmetic unit comprising a plurality of adders and a like plurality of subtractors each having two inputs for receiving a data unit of a predetermined number of bits,

timing means defining cycles of the data store and the arithmetic unit,

means for initially loading an array of the data store in a predetermined order with a matrix to be processed,

addressing means including means for fetching a memory word on each cycle and first gating means for supplying each data unit of a fetched memory word to a predetermined input of one adder and one subtractor,



a plurality of registers each holding the number of data units in a memory word, and second gating means for transferring the output of each adder and each subtractor to a predetermined data unit position of said registers in a repeating pattern of a plurality of cycles, and

third gating means and store operation means in said addressing means for loading a register into a predetermined data store word location on each cycle in an identical addressing pattern for the fetch and store operations during each of a plurality of passes of arrays of the data store through the arithmetic unit.

4,210,932

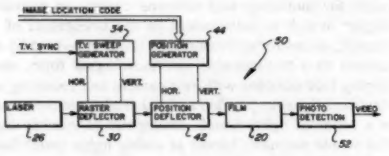
METHOD AND APPARATUS FOR RECORDING AND REPRODUCING ON FILM DIRECTLY VIEWABLE TV VIDEO SIGNALS

Donald E. Dick, Boulder; Robert L. Metz, Superior, and Raymond D. Elliott, Denver, all of Colo., assignors to Life Instruments Corporation, Colo.

Filed Jul. 5, 1978, Ser. No. 922,184

Int. Cl.[2] H04N *5/84;* G11B *7/00*

U.S. Cl. 358—130 **14 Claims**



1. A method of recording TV video signals having camera signals and sync signals of rasters of images on film and reproducing the TV video signals from the recording of the rasters, comprising the steps of:

producing a write beam of coherent light of substantial constant intensity from a source;

modulating the intensity of the write beam as a function of the amplitude of the camera signals of each of the rasters to be recorded:

deflecting the intensity modulated write beam to cause the write beam to conduct a TV raster scan for each of the images to be recorded;

focusing the write beam onto a nonmoving photographic film to expose the film, the film when developed producing a photographic record of the rasters, each of said photographic rasters being a directly viewable reproduction of an image, said photographic film having a plurality of sectors forming an array, the size of each sector being such that a raster scan is conducted by the beam in each of the sectors so that an image is recorded in each sector, the position of the photographic film being fixed relative to the source of the beam during the recording and reproducing of the TV video signals in each of the sectors, the photographic film also being fixed relative to the beam source during the positioning of the beam from each of the sectors to the next predetermined sectors on which a raster scan is to be conducted;

the reproducing of the TV video signals from the developed photographic record of the rasters, comprising the steps of:

producing a scanning beam of coherent light of substantially constant intensity;

deflecting the unmodulated scanning beam to cause the beam to conduct a raster scan of the photographic record of each of the rasters recorded on the nonmoving film, the intensity of the scanning beam being modulated by the transmissivity of the film; and

converting the intensity modulated scanning beam into amplitude modulated electrical signals, said electrical signals being a substantial reproduction of the TV video signals of each of the rasters recorded on the film.

4,210,933

PROCESS AND APPARATUS FOR DIGITALLY CLAMPING PULSE CODE MODULATED VIDEO SIGNALS

Jürgen Heitmann, Seeheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

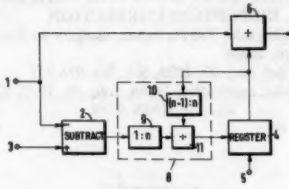
Filed Jul. 31, 1978, Ser. No. 929,498

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737431

The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.

Int. Cl.[2] H04N *5/18;* H04B *1/12*

U.S. Cl. 358—172 **10 Claims**



1. An apparatus for digitally time-average clamping binary encoded signals to a desired binary level comprising:

(a) a digital subtracter means for providing at its output the difference between the desired binary level and the binary, encoded signal,

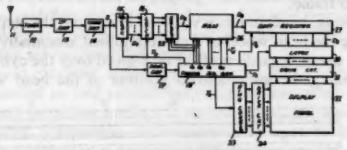
(b) a time-averaging means, connected to the output of the subtracter means and responsive to a switching pulse input, for transferring to its output a binary correction value numerically equal to said difference arithmetically averaged with a similarly obtained difference from at least one prior-in-time binary encoded signal, and

(c) digital adding means connected to the output of the time-averaging means for adding the binary correction value and the binary encoded signal, thereby providing at its output a digitally time-average clamped binary encoded signal.

4,210,934
VIDEO DISPLAY APPARATUS HAVING A FLAT X-Y MATRIX DISPLAY PANEL

Ken Kutaragi, Kawasaki, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,577
Claims priority, application Japan, Feb. 16, 1978, 53-16934
Int. Cl.[2] H04N 3/14, 5/70
U.S. Cl. 358—241 18 Claims



1. Video display apparatus having a flat X-Y matrix display panel comprised of an X-Y array of display elements for displaying a picture derived from a video signal, comprising:

analog-to-digital converting means for obtaining m samples of a line of said video signal, each sample being formed of n bits of different bit levels from the least significant bit level to the most significant bit level;

memory means for storing each sample in a respective one of m storage locations, each said storage location including n storage compartments for storing said n bits of a sample, respectively;

read-out means for serially reading out all of the bits of one level from the corresponding storage compartment in all of said n storage locations, and then for serially reading out all of the bits of the next level from the corresponding storage compartment in all of said m storage locations, and so on, in succession, until the bits of all levels have been read out from said m storage locations;

enabling means for enabling successive lines of said display elements in said display panel to be energized sequentially on a line-by-line basis; and

energizing means supplied in parallel with the m bits of each bit level, sequentially by level, read out from said storage locations for energizing selected ones of the display elements in an enabled line in accordance with the bit values of the read out bits.

4,210,935
L-SHAPED BRACKET ASSEMBLY AND RIMBAND TYPE IMPLOSION-RESISTANT CATHODE RAY TUBE

Robert B. Mitchell, Seneca Falls, and Harry R. Swank, Waterloo, both of N.Y., assignors to GTE Products Corporation, Stamford, Conn.

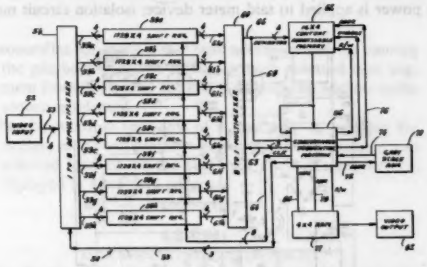
Filed Sep. 12, 1978, Ser. No. 941,622
Int. Cl.[2] H04N 5/65
U.S. Cl. 358—246 11 Claims

1. In an implosion-resistant cathode ray tube having an evacuated envelope with a face panel sealed to a flared neck portion wherein said flared neck portion has an electron gun assembly sealed therein and said face panel has a substantially rectangular-shaped viewing portion extending to an upturned flanged portion with corners having a given radius of curvature extending into a flattened portion, a pair of rimbands contacting said flanged portion, and a metal band encircling and exerting a compressive force on the rimbands and upturned flanged portion of the face panel the improvement comprising at least one substantially "L"-shaped bracket member having a base portion connected to an upstanding attachment portion with the base portion positionally located and compressively held intermediate said rimbands and said metal band at said corner of said face panel and of a size to provide contact of said encircling metal band and said rimbands at a point on said given radius of curvature of said corner and prior to said flattened portion of said flanged portion of said face panel.

4,210,936
METHOD AND APPARATUS FOR REPRODUCING AN ORIGINAL GRAY SCALE IMAGE

Gregory M. Cinque, Stamford; Roger W. Pryor, Trumbull, and Arthur Rubinstein, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1977, Ser. No. 864,208
Int. Cl.[2] H04N 1/40; G01B 1/29
U.S. Cl. 358—283 23 Claims



1. A method of reproducing, on a reproduction medium, an original gray scale image that may be divided into an array of discrete picture elements, said method comprising the steps of:

A. scanning each of said picture elements to determine its gray level and its location in said picture element array, to thereby generate gray level data representative of the gray level and location data representative of the location in said picture element array of each said picture element;

B. calculating the gray level of the picture element array from the gray level data representative of each of said individual picture elements in accordance with a gray scale function, and

C. on said reproduction medium in an array of reproduction locations corresponding to the locations of picture elements in said picture element array, by using said gray level data and said location data, sequentially darkening reproduction locations in the order of decreasing picture element gray level, beginning with the reproduction location that corresponds to the location in said picture element array of the one of said picture elements having the darkest gray level, until the actual gray level of said array of reproduction locations substantially equals the calculated gray level of said picture element array, whereby the distribution of darkened reproduction locations within said array of reproduction locations approaches the distribution of the gray level of said picture elements within said picture element array.

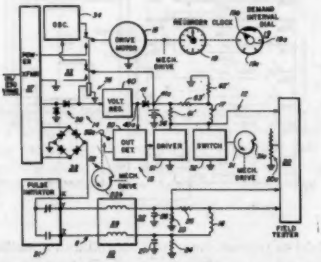
4,210,937
SOLID STATE POWER OUTAGE RECORDING CIRCUIT

Robert E. Dyer, Springfield, Ill., assignor to Sangamo Weston, Inc., Atlanta, Ga.

Filed May 8, 1978, Ser. No. 903,761
Int. Cl.[2] G11B 5/00
U.S. Cl. 360—6 10 Claims

1. In a recording apparatus for recording data and time information derived from an associated meter device, said

recording apparatus having data recording means for recording data signals on a magnetic tape, and time recording means including an interval timer operative to generate time reference signals which represent predetermined intervals of time of operation of said meter device, and a time record circuit having a recording head for recording said time reference signals on said magnetic tape as a time reference for said data signals, said time recording means being energized by power from a power circuit means whenever power is applied to said meter device, and being energized by power from an auxiliary source during an interruption of power to said meter device, permitting recording of time reference signals both during the presence and the interruption of power to said meter device; a power outage indicating circuit for detecting the presence of power and the interruption of power to said meter device, said power outage indicating circuit comprising: a power outage detecting circuit including a controlled solid state switching device operable between conducting and non-conducting states energizing circuit means connected to said power circuit means for applying power to said detecting circuit whenever power is applied to said meter device; isolation circuit means



for isolating at least said energizing circuit means and said detecting circuit from said auxiliary source whereby said switching device is operated to one of said states following an interruption of power to said meter device; and said detecting circuit including enabling circuit means for causing said switching device to be operated to said other state to generate a power outage indication following the restoration of power to said meter device; outage indication recording circuit means including timing circuit means enabled in response to the outage indication generated as said switching device is operated from said one state to said other state for generating a timing signal, and second switching means responsive to said timing signal for controlling said time record circuit to record a power outage indicating signal on said magnetic tape, said enabling means including outage switch means coupled to said interval timer and operated thereby in timed relationship therewith to cause the power outage indication to be generated in association with a succeeding time reference signal generated following the restoration of power and said switching device being maintained in said other state, inhibiting said indication recording circuit means as long as power continues to be applied to said meter device.

4,210,938

METHOD AND SYSTEM FOR SPEED-MODIFIED REPRODUCTION OF VIDEO SIGNALS STORED ON VIDEO RECORDING TAPE

Jürgen Heitmann, Seeheim, and Rudolf Wilhelm, Klein-Gerau, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1978, Ser. No. 908,930

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725365

Int. Cl.[2] G11B *5/78, 27/10;* H04N *5/78*

U.S. Cl. 360—10 **9 Claims**

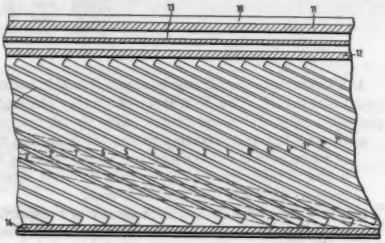
1. Method to reproduce video signals stored on magnetic tape in form of track portions which are inclined with respect to the center line of the tape (10) and utilizing a reproduction apparatus in which the tape is guided in a spiral path about at least a portion of the circumference of the cylinder in which a head wheel, having at least one transducer head, is rotatably mounted, for magnetic signal transducing engagement with the tape, and in which the speed of the tape, with respect to the head wheel, differs from the speed of the tape during recording;

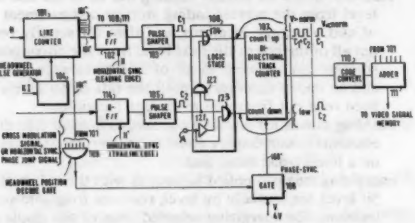
and wherein at least three track portions form a complete video frame;

comprising, in accordance with the invention, the steps of

rotating the head wheel at a predetermined, essentially constant speed, regardless of the tape speed over the cylinder;

determining the instantaneous position of the head wheel





and deriving head wheel position signals defining addresses of said head wheel position as the head wheel rotates;

determining the instantaneous position of incremental areas of the tape on the cylinder, and deriving tape position signals defining addresses of said tape position as the tape moves over the cylinder;

combining said head wheel position address and said tape position address and deriving a line address of a signal transduced by said head wheel from said incremental area;

and, by means of said line address, associating the signal content of incremental areas in any one line and storing said signal content in a memory for subsequent reading out of the signal information from said memory at said line addresses.

4,210,939

METHOD AND SYSTEM FOR SYNCHRONIZING THE MOVEMENT OF PLURAL RECORDING MEDIA

Ichiro Ninomiya, Atsugi; Katsuhiko Nagakura, Yokohama; Hitoshi Sakamoto, Zama, and Katsuichi Tachi, Kawasaki, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 843,314, Oct. 18, 1977, abandoned. This application Jun. 16, 1978, Ser. No. 916,052

Claims priority, application Japan, Oct. 21, 1976, 51-126658

Int. Cl.[2] G11B *15/52*

U.S. Cl. 360—14 **15 Claims**

1. A system for synchronizing the movement of a first recording medium by first transport means with the movement of a second recording medium by second transport means, each of said first and second recording media having address-

able recording frames identified by frame signals and addresses recorded thereon, said system comprising:

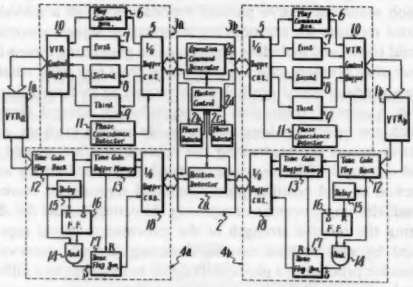
first advancing means for controlling said first transport means to move said first recording medium at a fixed normal speed in capstan servo-controlled relation;

second advancing means for controlling said second transport means to move said second recording medium at a selective speed greater than, equal to or less than said normal speed;

first playback means for playing back the addresses recorded on said first recording medium while said first recording medium is moved at said fixed normal speed in said capstan servo-controlled relation;

second playback means for playing back the addresses recorded on said second recording medium while said second recording medium is moved at said selective speed;

address comparison means selectively operable upon the occurrence of a predetermined phasing condition of said first and second recording media for comparing the respective instantaneous addresses played back by said first and second playback means to respective predetermined first and second addresses; and



speed command means responsive to said address comparison means for commanding said second advancing means to control said second transport means to move said second recording medium at said greater than normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is greater than the difference between said instantaneous address played back by said first playback means and said first predetermined address, to control said second transport means to move said second recording medium at said less than normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is less than the difference between said instantaneous address played back by said first playback means and said first predetermined address, and to control said second transport means to move said second recording medium at said normal speed when the difference between said instantaneous address played back by said second playback means and said second predetermined address is equal to the difference between said instantaneous address played back by said first playback means and said first predetermined address.

4,210,940

VARIABLE FORMAT TAPE REPLAY SYSTEM

Daniel G. Prysby, Elk Grove Village; Ian L. Bower, Rosemont, and William B. Huber, Oak Park, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sep. 29, 1978, Ser. No. 946,989

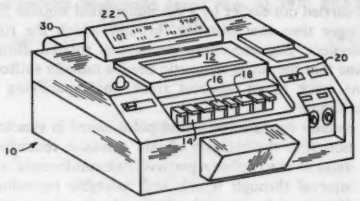
Int. Cl.² G11B *27/00, 5/02*

U.S. Cl. 360—33 **16 Claims**

1. For use with a tape playback machine, a system for selecting and replaying desired tape segments in any predetermined sequence, comprising:

means for manually entering a plurality of tape addresses corresponding to starting addresses of segments of the tape selected for play back and for entering tape addresses corresponding to stopping addresses of the selected segments of tape;

means for manually selecting any sequence in which the tape segments are to be played back; and



a controller for storing said tape addresses and for causing the playback machine to replay each selected tape segment from its starting address to its stopping address in the sequence selected,

whereby multiple segments of a tape may be selected for replay, each such segment beginning and stopping at any selected location on the tape, and all such segments are replayed in a selected sequence.

4,210,941

DATA-RECORDING DEVICE

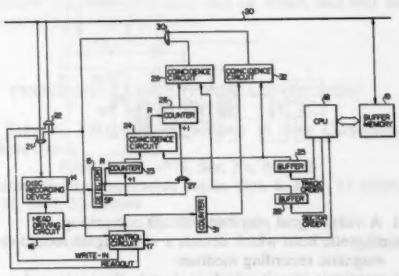
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 712,532, Aug. 9, 1976. This application Jun. 30, 1978, Ser. No. 920,719

Claims priority, application Japan, Aug. 11, 1975, 50-97348; Dec. 26, 1975, 50-158628

Int. Cl.² G11B *5/09, 15/18*

U.S. Cl. 360—48 **5 Claims**



1. A data-recording device for substantially continuously reading and/or writing data on tracks of a magnetic disc recording medium, comprising:

a rotatable magnetic disc recording medium having a recording surface with a plurality of adjacent concentric circular tracks, each track having a predetermined starting position; and

a single magnetic head disposed so as to face the recording surface of the rotatable magnetic disc recording medium and being shiftable in the radial direction of the magnetic disc recording medium from the predetermined starting position of one track of that of another track while said magnetic disc recording medium is rotating, said magnetic head including means for detecting the starting position of the first read-write portion of each track;

means coupled to said single magnetic head for reading and/or writing data on adjacent tracks of said recording medium; and

means for specifying said starting position of said first read-write portion of at least two adjacent tracks to be at the initial points of different circumferential angular intervals of the recording medium as measured from the position of the magnetic head, and for specifying the starting position of the first read-write portion of a succeeding track to be spaced from that of a preceding track in which read-write is carried out earlier by a circumferential angular distance longer than that distance through which the rotatable magnetic disc recording medium is rotated during the time that the single magnetic head is radially shifted from one track to an adjacent track, said specifying means including:

a counter operated by a first pulse issued in synchronization with the rotation of said rotatable recording medium so as to define a particular circumferential angular interval through which said rotatable recording medium is to be rotated to bring the starting position of said first read-write portion of each track to said magnetic head, and a second pulse for separating a plurality of sectors into which one full length of each track of the rotatable recording medium is divided, to thereby distinguish the respective sectors of each track; and

comparing means for comparing the counts made by said counter and the sequential order of a specified track, thereby determining said starting position of said first read-write portion of each track.

4,210,942

VIDEO SIGNAL PLAY-BACK CIRCUIT

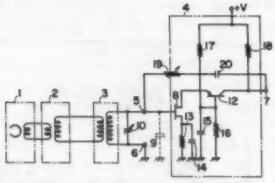
Hisashi Nakamura, Tokyo; Toshiyuki Akiyama, Kokubunji; Akira Shibata, Yokosuka, and Yoichi Tokunaga, Mito, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 3, 1978, Ser. No. 883,155

Claims priority, application Japan, Mar. 11, 1977, 52-25943

Int. Cl.[2] G11B *5/45, 5/02*

U.S. Cl. 360—65 **8 Claims**



1. A video signal play-back circuit comprising:

a magnetic head which detects a video signal recorded on a magnetic recording medium;

a resonance circuit which is electrically connected to said magnetic head so that the signal picked up by said magnetic head may be applied to said resonance circuit, and which includes an inductance element and a capacitance element including a variable capacitor for adjusting the resonance frequency of the resonance circuit for equalization of the frequency characteristic of the signal play-back circuit;

an amplifier circuit having a field-effect transistor of which the gate terminal is connected with said resonance circuit to provide a high input impedance to said amplifier circuit; and

a variable resistor which is connected between one output terminal of said amplifier circuit and one terminal of said resonance circuit and which serves to adjust a quality factor Q of said resonance circuit.

4,210,943

AUTOMATIC TRACKING SERVO CONTROL SYSTEM

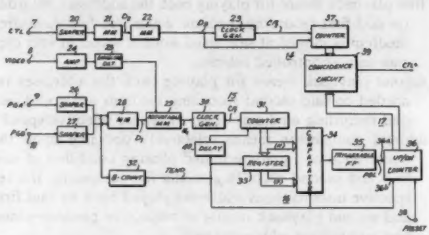
Tadahiko Nakamura, Kanagawa, and Kenji Nakano, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,269

Claims priority, application Japan, Sep. 8, 1977, 52-107233

Int. Cl.[2] G11B *21/10, 15/46*

U.S. Cl. 360—70 **19 Claims**



1. In a servo control system of the type adapted to control the tracking of at least one rotary signal reproducing head which scans successive parallel record tracks on a movable record medium for reproducing information signals recorded in said tracks and including position pulse generating means for generating position pulses when said at least one head rotates into a predetermined position with respect to said record medium, a control transducer for reproducing control signals which are recorded along said movable record medium, and control means for controlling the relative position of said at least one head with respect to the tracks scanned thereby as a function of said position pulses and said reproduced control signal: the improvement comprising detecting means for detecting the relative strength of the information signal reproduced by said at least one head during periodic intervals; means for producing a phase shift signal in response to a difference between said relative signal strengths in successive periodic intervals, each said phase shift signal representing a predetermined increment of positive or negative phase shift for the control signal reproduced by said control transducer during each said periodic interval; phase shift means responsive to said phase shift signal for shifting the phase of each reproduced control signal; and means for supplying the phase shifted control signal to said control means.

4,210,944

TAPE STOP DETECTION MECHANISM FOR CASSETTE TAPE RECORDERS

Akihiro Fushimi; Noboru Tabara, and Mikio Isaki, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,287

Claims priority, application Japan, Jan. 31, 1978, 53-8789

Int. Cl.[2] G11B *15/22;* B65H *59/38*

U.S. Cl. 360—74.2 **6 Claims**

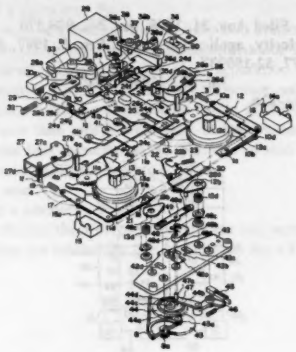
1. A mechanism for detecting the stoppage of tape run in a cassette tape recorder including two reel bases with reel shafts, said reel bases being driven by a suitable drive, which comprises

two slip plates associated with said reel bases so as to be biased upon rotation of the reel shafts,

a detection lever connected at either end with said slip plates, said lever being displaced upon rotation of at least one reel shaft,

cam means which does not cooperate with the detection lever when the lever is displaced, but cooperates with the

detection lever when the lever is restored as a result of stoppage of the reel shafts, and



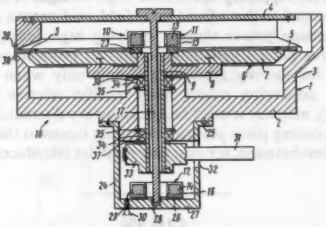
means for interrupting the drive to the reel bases or changing the drive into another state in response to the cooperation of said cam means with said detection lever.

4,210,945

ROTARY MAGNETIC HEAD ASSEMBLY

Konstantin A. Lavrentiev, ulitsa Kutsygina, 6, kv. 97; Svyatoslav D. Kretov, Leninsky prospekt, 153, kv. 59, and Alexandr G. Koshelev, Leninsky prospekt, 189, kv. 87, all of Voronezh, U.S.S.R.

Filed Sep. 5, 1978, Ser. No. 939,338
Int. Cl.² G11B 5/20
U.S. Cl. 360—108 **30 Claims**



1. A rotary magnetic head assembly, comprising:

a current-conducting housing comprising a bottom, walls, a lid and an internal surface;

a hollow shaft rotatably arranged in said housing;

a holder mounted on said shaft and supporting magnetic heads;

a contactless signal transformer device accommodated in said housing and having a rotor mounted on said holder and a stator spaced at some distance from said rotor, said rotor and stator having external surfaces, cores constructed as closed magnetic circuits, and windings constructed as helices having first ends and second ends and wound around said closed magnetic circuits so that centers of the turns of said helices are on a circumference matched with a center line of each of said closed magnetic circuits, the ends of said winding of said rotor being electrically connected to said magnetic heads; and

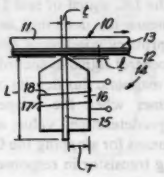
a current-conducting element accommodated in said hollow shaft so that it partially comes out of that shaft and is encompassed by said closed magnetic circuits, said current-conducting element being so attached to said bottom and said lid of said housing that said lid, said walls and said bottom of said housing and said current-conducting element make up a closed spatial coupling loop of said windings of said rotor and stator.

4,210,946

MAGNETIC RECORDING MEDIUM

Shun-Ichi Iwasaki, 1-11-35 Kunimi, Sendai-shi, Miyagi-ken, and Yoshihisa Nakamura, Izumi, both of Japan, assignors to Sony Corporation, Tokyo; Fujitsu Limited, Kanagawa and Shun-Ichi Iwasaki, Miyagi, all of, Japan

Filed Sep. 19, 1978, Ser. No. 943,749
Claims priority, application Japan, Sep. 30, 1977, 52-118424
Int. Cl.² G11B 5/66
U.S. Cl. 360—131 **15 Claims**



1. A magnetic recording medium for the perpendicular recording of signals by a single-pole type magnetic recording head comprising:

a first layer defining a surface of the medium adapted to confront the recording head and being formed of a chromium-cobalt alloy containing about 5 to 25 weight percent of chromium and having an easy axis of magnetization substantially perpendicular to said surface, with the thickness of said first layer being no greater than 3.0 microns;

a second layer of a low coercive force magnetic material disposed at the side of said first layer facing away from said surface and having a coercive force no greater than one-fifth the coercive force of said first layer, with the thickness of said second layer being at least 0.1 microns; and

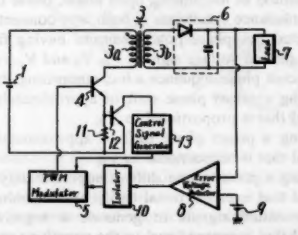
supporting means disposed at the side of said second layer remote from said first layer and on which said first and second layers are supported.

4,210,947

PROTECTIVE CIRCUIT FOR A SWITCHING REGULATOR

Akio Koizumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,578
Claims priority, application Japan, Oct. 6, 1977, 52-120343; Oct. 31, 1977, 52-130669
Int. Cl.² H02H 7/10
U.S. Cl. 361—18 **9 Claims**



1. A protective circuit for a switching regulator comprising:

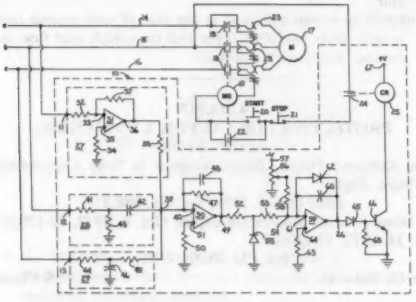
(a) a DC voltage source having a pair of terminals;
(b) a transformer having primary, secondary windings and a magnetic core;
(c) a switching transistor having first, second and third electrodes;
(d) circuit means for connecting the second and third electrodes of said switching transistor between the pair of terminals of said DC voltage source through the primary winding of said transformer;
(e) DC output means connected across the secondary winding of said transformer to produce a DC signal in response to the ON/OFF operation of said switching transistor;
(f) control means connected to the first electrode of said switching transistor so as to ON/OFF control the same in response to the DC signal of said DC output means;
(g) detecting means for detecting an overcurrent flowing through the primary winding of said transformer and for producing a control signal in accordance with a change of the saturated magnetic flux density of the magnetic core of said transformer when the temperature thereof is increased to a predetermined value; and
(h) protective means for stopping the ON/OFF operation of said switching transistor in response to the control signal from said detecting means.

4,210,948

METHOD AND APPARATUS FOR MONITORING LINE VOLTAGE IN A POLYPHASE SOURCE

Richard W. Waltz, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Jun. 15, 1978, Ser. No. 915,898
Int. Cl.[2] H02H *3/32*
U.S. Cl. 361—76 **5 Claims**



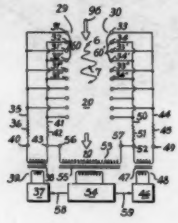
1. A method of monitoring open phase, phase reversal and voltage unbalance conditions in both wye-connected and delta-connected polyphase power sources having first, second and third phased voltage signals, V_a, V_b and V_c, respectively, in preselected phase sequence a-b-c, comprising the steps of:
imparting a preset phase shift of approximately 180° to a signal that is proportional to V_a;
imparting a preset phase shift of approximately 60° to a signal that is proportional to V_b;
imparting a preset phase shift of approximately −60° to a signal that is proportional to V_c; and summing the three phase-shifted signals to generate a negative-sequence signal that is proportional to the negative-sequence component of the three-phase line voltage.

4,210,949

DEVICE FOR ELECTRICALLY CHARGING PARTICLES

Senichi Masuda, No. 605, 1-40-10 Nishigahara, Kuta-ku, Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,370
Claims priority, application Japan, Sep. 5, 1977, 52-106400; Dec. 15, 1977, 52-150937
Int. Cl.[2] H05B *5/02*
U.S. Cl. 361—226 **9 Claims**



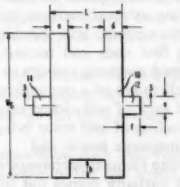
1. In a device for electrically charging particles, comprising two or more parallel plane plasma generating means opposite to one another at a determined distance and provided with corona discharge electrodes for charging particles in the intervening space, corona generating high voltage power sources coupled to apply a high voltage alternately to the corona discharge electrodes of said respective plane plasma generating means, for generating corona discharge, and a main field forming AC high voltage power source connected to apply a high AC voltage between the opposing plane plasma generating means, for forming a main AC field in the charging space; the improvement wherein said corona generating high voltage power sources comprise intermittently operative power sources for supplying intermittent high voltages of a frequency at least equal to that of said main field, said corona generating high voltage power sources applying high voltages to the respective plasma generating means to produce corona discharge for thereby generating plasma only when the plane plasma generating means have specific relative polarities, whereby unipolar ions of said polarity are alternately emitted from opposing plane plasma generating means to the charging space therebetween, for charging particles introduced into said space.

4,210,950

HIGH-RATIO-ACCURACY CAPACITOR GEOMETRIES FOR INTEGRATED CIRCUITS

Donald L. Fraser, Jr., Warren Township, Somerset County, and Michael F. Tompsett, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1978, Ser. No. 947,020
Int. Cl.[2] H01G *4/38*
U.S. Cl. 361—329 **8 Claims**



6. An integrated circuit comprising
a first capacitor having two spaced apart plates of selected shape, plate separation distance, and dielectric material,

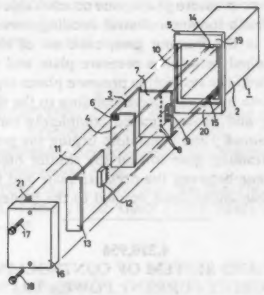
said first capacitor having a capacitance value C_S, at least one of said plates having
an area A_S,
and a perimeter P_S,
and a second capacitor having only two continuous spaced-apart plates with plate separation distance and dielectric material identical to the plate separation distance and dielectric material of the first capacitor, said second capacitor having a capacitance value $C_L = kC_S$ where k(k greater than unity) is the ratio of said second capacitance to the first capacitance, at least one of said plates of said second capacitor having
an area A_L,
and a perimeter P_L,
and wherein the aforementioned areas and perimeters of said plates are related by the expressions $A_L = kA_S$ and

$$\frac{A_S}{P_S} = \frac{A_L}{P_L}.$$

4,210,951
APPARATUS FOR HOUSING ELECTRICAL COMPONENTS

Peter Ritter, and Dieter Fahrenkrog-Petersen, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 929,944
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736546
Int. Cl.² H02B 1/02
U.S. Cl. 361—391 **13 Claims**

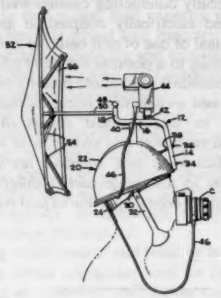


1. Apparatus for housing electrical components comprising:
a housing having opposed first and second ends, said first end having an opening therein;
guide means disposed in said housing for guiding at least one circuit board inserted through said opening;
a mounting member retained within said housing adapted to receive electrical components to be mounted thereon, said mounting member including a first leg adapted to be received in a portion of said opening;
at least one circuit board removably insertable in said housing in cooperation with said guide means, said circuit board being adapted to receive electrical components to be mounted thereon and including a plate mounted on an end thereof adapted to be received in the remainder of said opening whereby said first leg of said mounting member and said plate of said circuit board essentially close said opening when received therein; and
electrical contact means mounted on said mounting member and said circuit board adapted to mate upon insertion of said circuit board in said housing.

4,210,952
PORTABLE ILLUMINATION SOURCE FOR PHOTOGRAPHERS

Roger H. Ressmeyer, 679-4th Ave., San Francisco, Calif. 94118

Filed Feb. 23, 1978, Ser. No. 880,385
Int. Cl.² G03B 15/02
U.S. Cl. 362—17 **8 Claims**

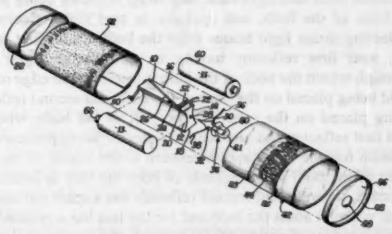


8. Portable apparatus for affording illumination of a subject in front of a photographer comprising a frame, means for securing the frame on the photographer's head so that said frame extends upward and rearward thereof, a light source mounted on the frame and directed rearward, and a reflector secured to the frame in light receiving relation to the light source for reflecting and diffusing light incident thereon toward the subject, the center of gravity of said frame, light source and reflector being rearward of the midpoint of the photographer's head so as to produce a moment thereon in a direction upwardly away from the photographer's face, said securing means including tension resisting means engagable with photographer's chin for counteracting said moment, said reflector being mounted so that the majority of the reflective surface thereof is above the top of the photographer's head.

4,210,953
SELF-ILLUMINATED CASE

Wilfred S. Stone, Box 4, Wayne, Ill. 60184

Continuation of Ser. No. 557,277, Mar. 10, 1975, which is a continuation of Ser. No. 424,321, Dec. 13, 1973, which is a division of Ser. No. 299,858, Oct. 24, 1972, Pat. No. 3,796,869. This application Nov. 19, 1976, Ser. No. 743,414
Int. Cl.² F21L 7/00; F21V 23/04
U.S. Cl. 362—189 **5 Claims**



1. An electrical flashlight comprising
a flashlight case having a resilient contact portion of electrically insulating material,
at least first and second electrically coupled batteries carried within said case, each of said batteries having an electrically conducting can acting as one terminal thereof and a

terminal post acting as a second terminal of opposite polarity electrically isolated from said can,

an externally directed electrically energizable flashlight bulb carried by said case and having a pair of electrical terminals, each one of said terminals being mutually exclusively electrically coupled to a terminal of opposite polarity of each of said batteries, and

a resilient electrically conducting cantilevered switch wire having one end electrically coupled to and supported from one terminal of one of said batteries and an opposite free end extending to a position normally adjacent to and spaced from a terminal of opposite polarity of the other of said batteries, said switch wire being carried within said case adjacent to said resilient electrically insulating contact portion such that said switch wire is closed into electrical contact with said adjacent normally spaced battery terminal to illuminate said flashlight bulb upon flexing said resilient contact portion of said flashlight case.

4,210,954

REFLECTORS

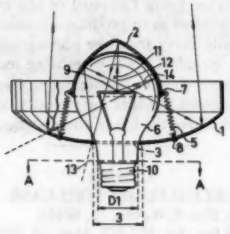
Max Laser, Tunnelgatan 20B, Stockholm, Sweden

Filed May 22, 1978, Ser. No. 908,527

Claims priority, application Sweden, Jan. 30, 1978, 7801054

Int. Cl.[2] F21V *7/00, 17/04*

U.S. Cl. 362—303 **3 Claims**



1. Improvement in reflectors, comprising a first reflector, means for detachably holding a light bulb in said first reflector, said bulb having a spherical top portion and a filament with a center, a small reflector, and means for holding said small reflector onto said light bulb, said small reflector being placed in front of the bulb, and opposite to said first reflector for reflecting direct light beams from the bulb to said first reflector, said first reflector having a centrally arranged hole through which the neck of the bulb is inserted, the edge of said hold being placed on the neck of the bulb said second reflector being placed on the spherical top part of the bulb, whereby said first reflector and said second reflector being positioned in relation to each other and in relation to the center of the filament of the bulb independently of how the bulb is inserted in a socket, wherein said second reflector has a spherical annular form where it abuts the bulb and for the rest has a symmetrical curvature that is parabolically formed, the center of the filament of the bulb being placed outside the focal point of said parabolic curvature, whereby the light beams, which are emitted from the center of the filament of the bulb and are reflected by the concave side of said second reflector towards the bulb, will meet the inner surface of said first reflector outside its center hole.

4,210,955

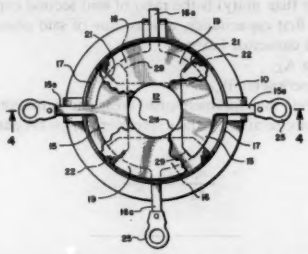
SHUTTER SYSTEM FOR STAGE-LIGHTING SPOTLIGHTS

Joseph H. Labrum, West Jordan, Utah, assignor to Electro Controls Inc., Salt Lake City, Utah

Continuation of Ser. No. 777,448, Mar. 14, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,084

Int. Cl.[2] F21V *17/02*

U.S. Cl. 362—321 **10 Claims**



1. A shutter system for stage-lighting spotlights comprising a housing; a fixed framing gate in said housing having an opening therein for the passage of light; two sets of opposing slots in said housing, one set located on each side of said framing gate; two sets of opposing shutter blades, each set of blades being associated with a set of slots and each shutter blade having a neck portion thereof extending through one of the slots of its associated set of slots and being adapted to be moved into or out of the open portion of said framing gate to restrict to any desired degree the size of the opening through which light passes; two pressure plates, one on each side of said framing gate and each having a central opening corresponding to said opening in the framing gate, each set of shutter blades being sandwiched between a pressure plate and said framing gate so as to hold the respective pressure plates separated from the framing gate by spaces corresponding to the thickness of a shutter blade; and means located completely outside of said spaces for resiliently and constantly urging the pressure plates toward said framing gate so that the shutter blades are held securely in place between the pressure plate and framing gate but are movable under force applied to the blades.

4,210,956

METHOD AND SYSTEM OF CONTROLLING HIGH VOLTAGE DIRECT CURRENT POWER TRANSMISSION PLANTS

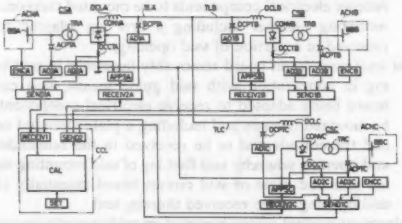
Atsumi Watanabe, Ibaraki, Japan, assignor to Hitachi, Limited, Japan

Filed Dec. 30, 1977, Ser. No. 865,874

Claims priority, application Japan, Jan. 5, 1977, 52-92

Int. Cl.[2] H02H *7/00;* **H02J** *3/36*

U.S. Cl. 363—51 **34 Claims**



1. A method of controlling an HVDC power transmission

plant, which comprises a D.C. transmission line, said transmission line comprising two D.C. conductors; at least two converter stations, at least one of said stations being a rectifier and at least one an inverter station, each station being connected on its A.C. side to A.C. system and on its D.C. side in parallel with the other stations through a D.C. reactor, and being provided with an A.C. voltage measuring means for said A.C. system, a D.C. current measuring means for said D.C. transmission line, a first data sending means for sending the outputs of said measuring means to a central control means, a first data receiving means for receiving the outputs of the central control means, and an automatic pulse phase shifter for sending a firing pulse to the converter in the station in accordance with the outputs of said first data receiving means; the central control means being provided with a second data receiving means for receiving the outputs of said first data sending means, a setting means for setting certain data, a calculating means for calculating a delay angle value for each converter in accordance with the outputs of said second data receiving means and said setting means, and a second data sending means for sending the outputs of said calculating means to said first receiving means; which method comprises the steps;

(a) setting an operational D.C. voltage Vds, current I_d and a commutation reactance X for each converter station,

(b) calculating by said calculating means a delay angle value α for each converter in accordance with the following equation

$$\alpha = \cos^{-1}\left\{ \frac{1}{\frac{3}{\pi}\sqrt{2}\,E} \left(Vds + \frac{3}{\pi} X I_d\right) \right\}$$

where E is a measured A.C. voltage, and

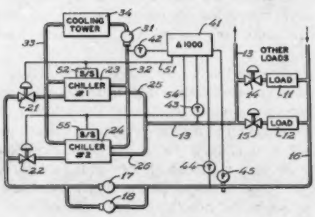
(c) controlling each converter in accordance with the delay angle value calculated therefor by said calculating means of the central control means.

4,210,957

OPERATING OPTIMIZATION FOR PLURAL PARALLEL CONNECTED CHILLERS

Donald H. Spethmann, Arlington Hts., Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1978, Ser. No. 904,170
Int. Cl.² G05B 13/02; G06F 15/20; F24H 11/06
U.S. Cl. 364—105 **17 Claims**



1. An optimization system for switching between at least first and second parallel connected chillers of a plural chiller refrigeration system, said chillers having an optimized range of changeover capacities defined at one end by an optimized changeover capacity at design refrigerant head of said first chiller and at the other end by an optimized changeover capacity at minimum refrigerant head of the first chiller, said optimization system comprising:

first means for supplying signals from which the actual load capacity of said building can be determined;

second means for supplying signals from which the actual refrigerant head of said chillers can be determined; and,

third means responsive to said first and second means for determining said actual load capacity, said actual refrigerant head, an optimized switchover capacity based upon said actual refrigerant head, said design refrigerant head, said minimum refrigerant head, said optimized changeover capacity at said design refrigerant head and said optimized changeover capacity at said minimum refrigerant head, and for comparing said optimized switchover capacity to said actual load capacity to switch on both chillers when said actual load capacity exceeds said optimized switchover capacity and to switch off one of said chillers when said actual load capacity falls below said optimized switchover capacity.

14. A method for optimally switching on and off chillers in a parallel connected plural chiller refrigerant system, said chillers having an optimized range of changeover capacity defined at one end by an optimized changeover capacity at design refrigerant head and at the other end by an optimized changeover capacity at minimum refrigerant head, said method comprising the steps of:

determining actual load of said building in terms of capacity;

determining actual refrigerant head for said chillers;

determining an optimized switchover capacity based upon actual refrigerant head, design refrigerant head, minimum refrigerant head, optimized changeover capacity at design refrigerant head, and optimized changeover capacity at minimum refrigerant head;

comparing the actual load in terms of capacity and the optimized switchover capacity; and,

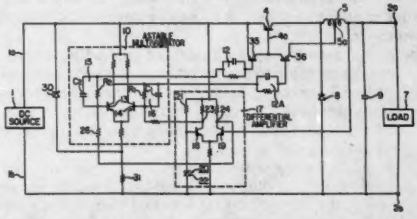
switching on an additional chiller when the actual load in terms of capacity exceeds the optimized switchover capacity and switching off a chiller when the actual load in terms of capacity falls below the optimized switchover capacity.

4,210,958

DC-DC CONVERTER OUTPUT STABILIZING DEVICE

Tsuneo Ikenoue, 14-6, Ichiban-cho 1-chome, Sendai-shi, Miyagiken, Japan; Mitsugi Suzuki, and Shin-Yng Liu, both of Sendai, Japan, assignors to Tsuneo Ikenoue; Tōhoku Ricoh, Ltd. and Tōhoku Musen Denki Co., Ltd., all of Miyagi, Japan

Filed Oct. 25, 1978, Ser. No. 954,455
Int. Cl.² H02M 3/335
U.S. Cl. 363—124 **2 Claims**



1. A DC-DC converter comprising:

a DC voltage source;

a series combination of a switching element having a control electrode, an input electrode and an output electrode, and an inductor connected in series with said DC voltage source;

a series combination of two transistors, the junction between said transistors being connected to said control electrode, and one end of said series combination of two transistors being connected to said input electrode;

a filter circuit for supplying direct current to a load, the switching element being controlled in response to a train of pulses applied to the control electrode thereof so as to control the output voltage from said filter circuit;

an astable multivibrator connected in parallel with said DC voltage source and having two time constant circuits;

a constant voltage circuit connected in parallel with said astable multivibrator, one common terminal of said parallel arrangement being connected to a terminal of said DC voltage source;

a differential amplifier connected in parallel with said DC voltage source for comparing the output from the filter circuit with a reference voltage and providing two oppositely phased control signals, the differential amplifier being connected to apply said control signals to vary the relative discharge times of said time constant circuits of said astable multivibrator,

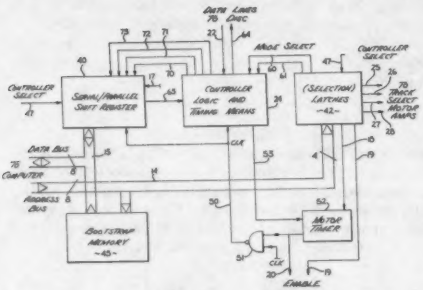
the other end of said series combination of two transistors being connected to the output electrode of said switching element, the control electrodes of said two transistors being respectively connected through resistance-capacitance coupling circuits to the output circuits of said astable multivibrator.

4,210,959

CONTROLLER FOR MAGNETIC DISC, RECORDER, OR THE LIKE

Stephen G. Wozniak, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed May 10, 1978, Ser. No. 904,420
Int. Cl.[2] G06F *13/08, 3/06*
U.S. Cl. 364—200 **14 Claims**



1. An interfacing means for interfacing between a digital computer and storage device such as a magnetic disc recorder, comprising:

register means having a plurality of parallel input/output lines for coupling to said computer and a serial input/output line for coupling to said storage device, said register means also having a control means having a plurality of register control lines for controlling transfer of data to and from said register means;

latch means having a plurality of latch input lines and a plurality of latch output lines, said latch means for controlling the flow of digital signals between latch input lines and latch output lines in response to a timing signal,

clock means for generating said timing signal,

read-only memory means having an address means with a plurality of address input lines, and a plurality of data output lines, said read-only memory means for receiving input signals on said address input lines and for providing predetermined output signals on said data output lines in response thereto;

a portion of said read-only memory means data output lines being coupled to said register control means via said register control lines for controlling data flow to and from said register, another portion of said read-only memory means data output lines being coupled to said latch means input lines, said latch means output lines being coupled to said addressing means via a portion of said read-only memory means address lines for providing a portion of an address thereto such that some of said output signals from said read-only memory means are employed as next address signals to said read-only memory means in response to said timing signal;

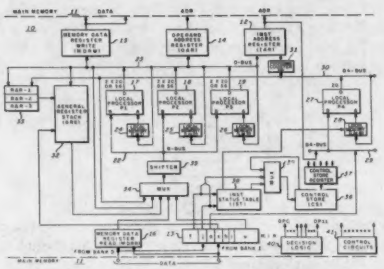
said interfacing means further including means for coupling the addressing means via another portion of said read-only memory means address lines to said computer whereby said computer may communicate with said storage device through said interfacing means.

4,210,960

DIGITAL COMPUTER WITH OVERLAPPED OPERATION UTILIZING CONDITIONAL CONTROL TO MINIMIZE TIME LOSSES

Barry R. Borgerson, Gwynedd Valley; Garold S. Tjaden, Doylestown, both of Pa., and Merlin L. Hanson, Arden Hills, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,305
Int. Cl.[3] G06F *9/28, 9/26*
U.S. Cl. 364—200 **37 Claims**



1. Conditional control apparatus for a digital computer capable of executing a plurality of instructions, said computer operating in computer cycles during which instruction fetching is overlapped with instruction execution without wasting computer cycles in effecting the overlapped operation, comprising

storage means for storing a plurality of instruction words each having first and second next address control fields and first and second function control fields,

fetching means for fetching an instruction word from said storage means during each computer cycle,

decision logic means for providing first and second decision signals in accordance with conditions generated within said computer,

said fetching means being responsive to said first and second next address control fields of an instruction word fetched in a computer cycle previous to the current computer cycle and to said first decision signal for selecting said first or second next address control field in accordance with said first decision signal and fetching, in said current computer cycle, the next instruction word from said storage means in accordance with the next address control field selected by said first decision signal, and

processor means for executing operations designated by said function control fields,

said processor means being responsive to said first and second function control fields of said instruction word fetched in said previous computer cycle and to said second decision signal for selecting said first or second function control field in accordance with said second decision signal and executing, in said current computer cycle, the operation designated by the function control field selected by said second decision signal,

said decision logic means providing said first and second decision signals for use in said current computer cycle in accordance with conditions generated within said com-

puter in response to execution by said computer, in said previous computer cycle, of an instruction word fetched during a computer cycle occurring before said previous computer cycle,

whereby said fetching of said next instruction word is overlapped with said execution of said operation without wasting computer cycles in effecting said overlapped operation.

4,210,961

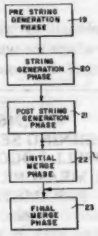
SORTING SYSTEM

Duane L. Whitlow, Hillsdale, N.J., and Azra Sasson, New York, N.Y., assignors to Whitlow Computer Services, Inc., Englewood Cliffs, N.J.

Continuation of Ser. No. 501,874, Aug. 30, 1974, which is a continuation of Ser. No. 187,689, Oct. 8, 1971. This application Sep. 19, 1978, Ser. No. 943,695

Int. Cl.[2] G06F *9/16*

U.S. Cl. 364—300 **35 Claims**



1. The new use of a general purpose electronic data processor having a central processing unit with a working storage area, at least one random access storage device and at least one input/output means, the new use comprising a method of ordering data comprising the steps of:

generating strings of sequentially ordered data, said strings being stored in sets of data ordered blocks,

dynamically detecting the bias of said data,

reversing the ordered sequence of string generation when a significant negative bias is detected,

calculating an optimum sequence for merging said generated strings, said sequence minimizing the number of times said data is merged,

anticipating the order in which new transfer units of data will be required for merging, said transfer units comprising at least one data block,

initially merging said generated strings according to said calculated string merge sequence to form a set of merged strings,

finally merging said set of merged strings to form a single string of ordered data, and

synchronizing the read/write operations during said merging steps.

4,210,962

PROCESSOR FOR DYNAMIC PROGRAMMING

James P. Marsh, San Jose, and Howard L. Steadman, Santa Cruz, both of Calif., assignors to Systems Control, Inc., Palo Alto, Calif.

Filed Jun. 30, 1978, Ser. No. 920,970

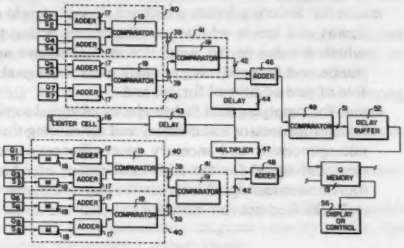
Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—402 **10 Claims**

1. In a processor for solving dynamic programming problems, the combination comprising:

A. first computation means to compare data representative of candidate transitions to or from each one of a first plurality of states of a stage of a dynamic programming problem, to determine the optimum one of said first plurality of state transitions;

B. second computation means to compare data representative of candidate transitions to or from each one of a second plurality of states of said stage of dynamic programming problem, to determine the optimum one of said second plurality of state transitions; and



C. third computation means to compare data representative of the optimum ones of said state transitions of said first and second pluralities, simultaneously with comparison by said first and second computation means of data respectively representative of transitions to or from states of third and fourth pluralities of states of a successive stage of said dynamic programming problem to determine the optimum one of said state transitions of said third and fourth pluralities.

4,210,963

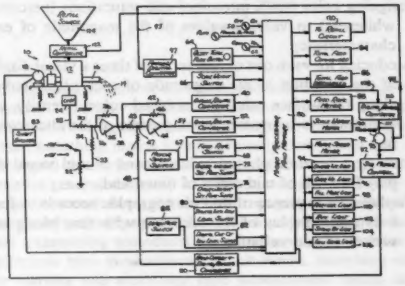
WEIGH FEEDER SYSTEM

Ronald J. Ricciardi, 108 Malcolm Ave., Garfield, N.J. 07026; Angelo Ferrara, 7 Bryn Mawr Way, Fairfield, and Joseph L. Hartmann, 85 Hillside Ave., West Caldwell, both of N.J. 07006

Continuation of Ser. No. 803,251, Jun. 3, 1977, abandoned, which is a continuation of Ser. No. 678,391, Apr. 19, 1976, Pat. No. 4,054,784, which is a continuation-in-part of Ser. No. 587,869, Jun. 18, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,203

Int. Cl.[2] G01G *11/08*; G06F *15/46*

U.S. Cl. 364—567 **13 Claims**



1. A weigh feeding machine comprising:

a container for a substance;

means for discharging substance from the container at a controllable feed-out rate;

means for sensing the weight of at least the container and any substance therein and for producing a first electrical signal indicative of the instantaneous value of said weight;

a digital microprocessor and a digital memory;

means for supplying to said digital microprocessor and memory said first electrical signal and a second electrical signal indicative of a desired feed-out rate;

means for causing said digital microprocessor and memory to combine said first and second electrical signals and to produce as a result a third electrical signal indicative of the degree of a departure, if any, from the desired feed-out rate;

means for causing the discharging means to feed out said substance at a feed-out rate determined by said third electrical signal;

means for detecting forces which act on said weight sensing means and are in addition to the forces acting thereon which are due to the weight of said container and substance, and for producing a fourth electrical signal indicative of said additional forces; and

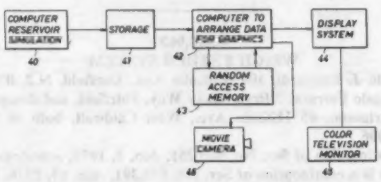
means for supplying said fourth electrical signal to the digital microprocessor and memory and for causing the digital microprocessor and memory to compensate said third electrical signal for the additional forces of which said fourth electrical signal is indicative and to thereby tend to make the feed-out rate insensitive to said additional forces.

4,210,964

DYNAMIC VISUAL DISPLAY OF RESERVOIR SIMULATOR RESULTS

William L. Rogers, Rijswijk, Netherlands; Paul A. Good, Houston, and Richard A. Smith, Missouri City, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 17, 1978, Ser. No. 870,231
Int. Cl.[2] G06F *15/36*; H04N *7/18*
U.S. Cl. 364—578 **13 Claims**



1. In a method for producing a dynamic visual display of the variation with time along a surface of physical characteristics of a producing petroleum reservoir wherein the magnitude of each characteristic is calculated for each of a series of times, a series of steps comprising:

assigning color (tint), intensities and saturations (perceived whiteness) to variuos values of the magnitude of each characteristic;

producing for each one of said series of times a visual display of the variation in the magnitude of each characteristic along the surface using the assigned color, intensity, and saturation, to represent the magnitude of the characteristic;

forming a separate photographic record of said visual display for each of said series of times; and,

displaying a sequence of said photographic records to form a dynamic display of the variation with time along said surface of said variation.

4,210,965

ACOUSTIC WELL LOGGING METHOD AND APPARATUS FOR DETECTING AND MEASURING AN ACOUSTIC WAVE

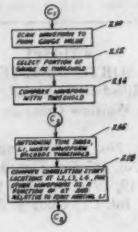
John D. Ingram, Meudon, France, assignor to Schlumberger Technology Corp., New York, N.Y.

Division of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,715
Int. Cl.[2] G01V *1/40*
U.S. Cl. 367—26 **21 Claims**

1. A method for automatically determining the location of an acoustic wave in a waveform which is representative of the output of a sonic receiver during well logging comprising the steps of

scanning the waveform to form a gauge value indicative of maximum amplitude of the waveform;

selecting a predetermined portion of the gauge value to establish a threshold value;



forming combinations of initial portions of the waveform; and

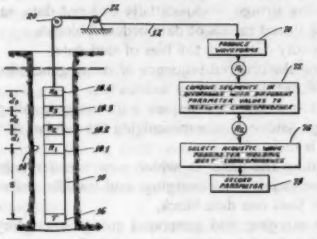
comparing the combinations with the threshold value to identify the place where the waveform exceeds the threshold as the location of the acoustic wave.

4,210,966

SELECTIVELY COMBINING SEGMENTS OF AT LEAST FOUR ACOUSTIC WELL LOGGING WAVEFORMS TO AUTOMATICALLY MEASURE AN ACOUSTIC WAVE PARAMETER

John D. Ingram, Meudon, France, assignor to Schlumberger Technology Corp., New York, N.Y.

Continuation of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,389
Int. Cl.[2] G01V *1/40, 1/36*
U.S. Cl. 367—27 **19 Claims**



1. A method for automatically measuring an acoustic wave parameter of a sonic wave present in a plurality of waveforms derived from selectively spaced sonic receivers operated in a borehole investigation comprising the steps of

producing a set of waveforms representative of sonic waves detected by at least four sonic receivers;

combining by multiplication successively different waveform segments from respective ones of said at least four receivers, wherein said segments are selected according to different values of an acoustic wave parameter of a sonic wave to produce measurements of the correspondence between waveform segments from at least four different sonic receivers as a function of the different acoustic wave parameter values;

automatically comparing said correspondence measurements to determine which represents the best correspondence between said waveform segments;

selecting the acoustic wave parameter value which yields said best correspondence between the waveform segments

in the set to determine the acoustic wave parameter for said sonic wave; and

recording said selected acoustic wave parameter as a function of borehole depth.

4,210,967

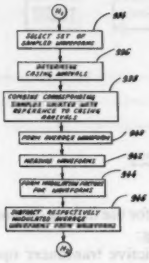
METHOD AND APPARATUS FOR DETERMINING ACOUSTIC WAVE PARAMETERS IN WELL LOGGING

John D. Ingram, Houston, Tex., assignor to Schlumberger Technology Corp., New York, N.Y.

Division of Ser. No. 581,381, May 27, 1975, abandoned. This application Jul. 27, 1978, Ser. No. 928,390

Int. Cl.² G01V *1/40, 1/28*

U.S. Cl. 367—34 **11 Claims**



1. An automatic sonic borehole investigating method operating with sonic waveforms derived from a plurality of sonic receivers which are vertically disposed in a predetermined manner in a borehole to respond to sonic waves introduced to propagate through an acoustic responsive medium by a transmitter located at preselected distances from the receivers comprising the steps of

producing waveforms individually representative of sonic waves incident upon respective different receivers;

estimating the arrival time of a predetermined signal in the different waveforms;

combining the different waveforms in correspondence with an alignment of the estimated signal arrivals to form a signal emphasized waveform; and

removing predetermined portions of the signal emphasized waveform from respectively associated waveforms to produce waveforms from which the predetermined signal is effectively filtered.

4,210,968

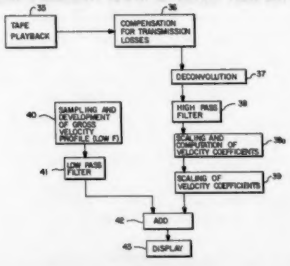
SEISMIC EXPLORATION TECHNIQUE

Roy O. Lindseth, 241 Eagle Ridge Dr., Calgary, Canada

Filed Dec. 16, 1975, Ser. No. 641,219

Int. Cl.² G01V *1/28, 1/36*

U.S. Cl. 367—46 **5 Claims**



1. A method of producing a display of the acoustic velocity characteristics of individual strata in a geologic section comprising the steps of:

propagating acoustic energy through said section from a surface transmission station;

detecting at least one receiving station at the surface of the earth acoustic energy reflected from interfaces within the section;

recording signals representative of the amplitude of the received energy as a function of time;

compensating the signals representative of energy reflected from each interface for the transmission losses due to transmission through the strata above that interface;

filtering the compensated signals to remove signals having frequencies below a preselected frequency threshold;

inverting the reflection coefficients to determine a series of velocity coefficients;

providing signals below the preselected threshold representative of a gross velocity profile of the section;

adding the compensated filtered velocity coefficient signals to the signals representative of gross velocity profile; and

displaying the resulting added signals.

4,210,969

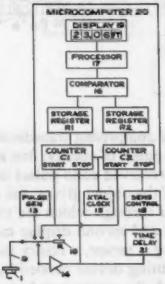
SONIC RANGING SYSTEMS TO ELIMINATE ERRORS DUE TO VARIATIONS IN THE SOUND VELOCITY IN THE MEDIUM

Frank Massa, Randolph, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees

Filed Mar. 13, 1978, Ser. No. 885,813

Int. Cl.² G01S *9/68*

U.S. Cl. 367—108 **6 Claims**



1. In combination in an electroacoustic sound range measurement system, transmitting electroacoustic transducer means, electric signal means for driving said transmitting transducer, switching means for momentarily connecting said electric signal means to said transducer, whereby a short burst of sound is generated by said transducer, a small sound reflecting target mounted along the axis of propagation of said burst of sound and precisely spaced from the sound radiating surface of said transmitting transducer by a fixed specified distance D1, electronic time measurement circuit means, switching means for starting said electronic time measurement means at the same instant of connecting the electric signal means to said transmitting transducer, receiving electroacoustic transducer means for receiving said transmitted sound burst signal after it is reflected from said target, said receiving transducer means also adapted for receiving said sound burst signal after it is returned from a sound reflecting surface located at an unknown distance D2 from said transducer radiating surface, first electronic circuit means connected to said receiving transducer and adapted for first stopping said electronic time measurement means at the first instant of the sound reflection from said reflecting target, whereby a first time period T1 is indicated by said time measurement means, second electronic circuit means

connected to said receiving transducer and adapted for stopping said time measurement means a second time at the instant of arrival of the sound reflection from said sound reflecting surface located at the unknown D2, whereby a second time period T2 is indicated by said time measurement means, and signal processing means whereby the ratio of T2/T1 is determined, said ratio T2/T1 being representative of the true distance D2 independent of the velocity of sound in the vicinity of said transmitting electroacoustic transducer, said electronic time measurement circuit means includes a sensitivity control means in said second electronic circuit means for adjusting the threshold sensitivity of said second electronic circuit whereby said time measurement circuit means is not responsive to any signal that may be generated by the receiving transducer as a result of multiple reflection between the receiving transducer and said target.

4,210,970

ECHO SOUNDERS

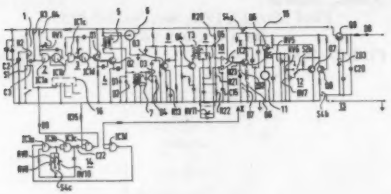
Walter M. Toubkin, London, and Alan J. Mulley, Stevenage, both of England, assignors to Space Age Electronics Limited, London, England

Filed Dec. 15, 1977, Ser. No. 860,896

Claims priority, application United Kingdom, Dec. 16, 1976, 52615/76

Int. Cl.[2] G01S *9/68, 7/66*

U.S. Cl. 367—109 **10 Claims**



1. An echo sounder comprising transducer means for transmitting and receiving pulses of energy; first and second display means for displaying received echo pulses in a manner indicative of the distance of the object giving rise to the echo; and a variable gain amplifier through which the transducer means is connected to the first and second display means; the first display means comprising a motor, a rotary member coupled to the motor, a light emitting device carried by the rotary member, a scale with which the rotary member co-operates, a first switch means co-operating with the rotary member and coupled to the transducer means, whereby said rotary member actuates said first switch means at a first frequency and a second switch means in series with the motor; and the second display means including an oscillator operating at said first frequency coupled to the transducer means and connected so as to be rendered operative when the second switch means is operated to de-energize the motor, whereby said variable gain amplifier is adjusted to a desired threshold during operation of said first display means and then said second switch is actuated to cause the display to appear only on said second display means.

4,210,971

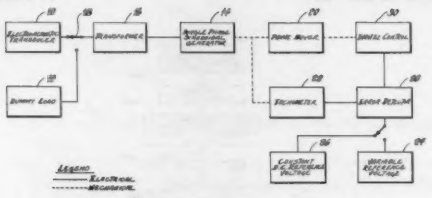
LONG DISTANCE UNDERWATER COMMUNICATION

William H. Martin, Jr., Morris Township, Morris County, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1963, Ser. No. 308,293

Int. Cl.[2] H04B *1/02*

U.S. Cl. 367—134 **1 Claim**



1. A transmitter for use in long distance underwater communication comprising:

(a) an electrostrictive transducer operable for radiating at least one hundred kilowatts of acoustic power into sea water in a frequency band fifty to one hundred cycles wide about a median frequency below five hundred cycles per second,

(b) an alternating current generator for supplying essentially sinusoidal electric signal power to the transducer,

(c) a dummy load approximating the load characteristics of the transducer,

(d) a transformer for coupling output power of the generator to one of the transducer and dummy load,

(e) a switching device between the transformer and the transducer and dummy load,

(f) an engine directly coupled to the alternator and operable with said generator at a very low coefficient of fluctuation, on the order of 1 part in 80,000,

(g) and means for controlling the engine speed in steps for changing the frequency of the generated power from any one of a plurality of equally spaced frequency steps within the band about six cycles apart to any other of the frequency steps within the band in less than ten seconds and then changing frequency at an essentially linear rate of two cycles per second per minute in a fixed length of time on the order of one to five minutes duration to the next higher or lower frequency step and then in less than ten seconds thereafter setting the frequency at any of the frequency steps within the band and changing frequency at an essentially linear rate in the same fixed length of time to the next higher or lower frequency step.

DESIGN PATENTS

GRANTED JUL. 1, 1980

ERRATA

For CLASS	See PATENT NO.
D24–053	255,679
D26–031	255,726
D28–008.1	255,727

255,616
DRESS
Garnet Miller, 306 Caledonia Ashley Rd., Caledonia, Ohio 43314
Filed Aug. 16, 1978, Ser. No. 934,018
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—80

255,617
ATHLETIC SHOE
Adolf Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to Adidas Sportschuhfabriken Adi Dassler Kg, Herzogenaurach, Fed. Rep. of Germany
Filed Jul. 27, 1977, Ser. No. 819,628
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 7308; Feb. 3, 1977, 7309
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

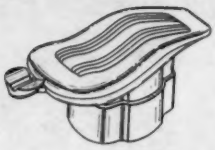
255,618
SHOE SOLE
Maurice D. Artstein, Creve Coeur, Mo., assignor to Brown Group, Inc., St. Louis, Mo.
Filed Dec. 21, 1977, Ser. No. 862,936
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

255,619
NECKTIE
Gaetano Leonardi, 452 - 69th St., Brooklyn, N.Y. 11220
Filed Jun. 30, 1977, Ser. No. 811,780
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—354

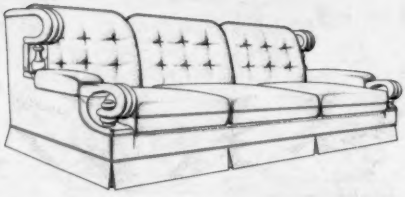
255,620
BOOT REMOVER
Louis D. Innocenzi, 12 Flower Hill Dr., Trenton, N.J. 08638
Filed Aug. 17, 1978, Ser. No. 934,300
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—378.2

255,621
BEVERAGE CARRIER OR SIMILAR ARTICLE
Richard V. McCool, 1904 Ramstead La., Reston, Va. 22091
Filed Mar. 6, 1978, Ser. No. 884,043
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—394

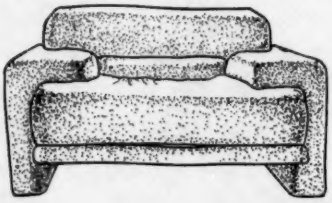
255,622
DENTAL CHAIR
Sadayasu Ota, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan
Filed Dec. 7, 1977, Ser. No. 858,419
Claims priority, application Japan, Jul. 29, 1977, 52-30307
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—22



255,623
SOFA
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 22, 1977, Ser. No. 863,273
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

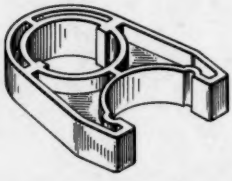


255,624
UPHOLSTERED SEAT
Antonello Mosca, Milan, Italy, assignor to Fratelli Saporiti, Varese, Italy
Filed Mar. 17, 1977, Ser. No. 778,390
Claims priority, application Italy, Sep. 17, 1976, 60924/76[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

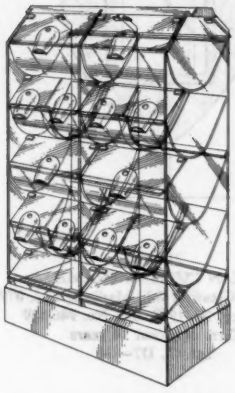


255,625
ARMCHAIR
Karl Lübke, Rheda, Fed. Rep. of Germany, assignor to Lübke KG, Rheda, Fed. Rep. of Germany
Filed Sep. 9, 1977, Ser. No. 831,794
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

255,626
BRACKET FOR HAND HELD SHOWERHEAD
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Jul. 26, 1977, Ser. No. 819,223
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86

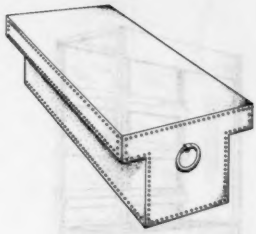


255,627
COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING CABINET FOR FOOD PRODUCTS
Hamilton S. Newsom, Jr., Hinsdale, and Vincent Battista, Elmhurst, both of Ill., assignors to Midwest Nut & Seed Company, Inc., Chicago, Ill.
Filed Feb. 13, 1978, Ser. No. 877,552
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—157



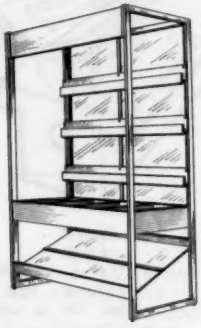
255,628
CUBE TABLE OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 835,987
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

255,629
TABLE OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,201
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

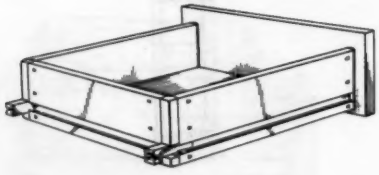


255,630
OPEN CABINET OR THE LIKE
John O. Van Koert, 190 E. 72nd St., New York, N.Y. 10021
Filed Sep. 23, 1977, Ser. No. 836,191
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

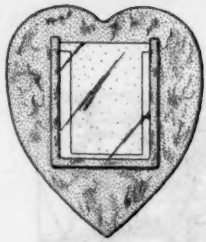
255,631
DISPLAY UNIT
Robert H. Sniderman, 110 Glenrose Ave., Toronto, Ontario, Canada (M4T 1K8)
Filed May 15, 1978, Ser. No. 905,824
Claims priority, application Canada, Nov. 18, 1977, 1811772
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—190



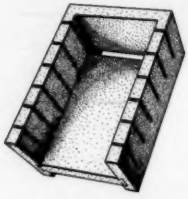
255,632
DRAWER
Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Belper, England
Filed Jan. 27, 1978, Ser. No. 872,957
Claims priority, application United Kingdom, Jul. 29, 1977, 980962/77
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



255,633
TEXTURED PICTURE FRAME
Joe L. Felton, 831 S. Fiske Blvd., Rockledge, Fla. 32955
Filed Feb. 6, 1978, Ser. No. 875,141
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—244



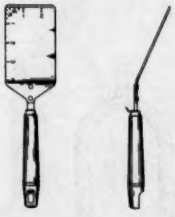
255,634
BEAN CUTTING FRAME
Robert K. Zuck, 69 Glenwild Rd., Madison, N.J. 07940
Filed Sep. 28, 1978, Ser. No. 946,839
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43



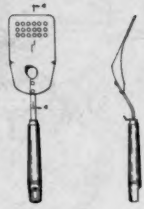
255,635
BEVERAGE CONTAINER HOLDER
Daniel F. Valmassei, 356 Armitage Dr., Monroe, Mich. 48161
Filed Apr. 21, 1978, Ser. No. 899,011
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70

255,636
VEGETABLE MASHER
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,497
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—101

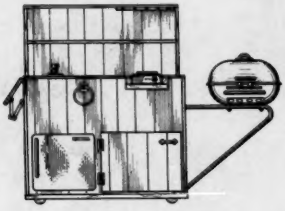
255,637
TURNER OR THE LIKE
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,493
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102



255,638
TURNER OR THE LIKE
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 28, 1978, Ser. No. 937,495
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—102

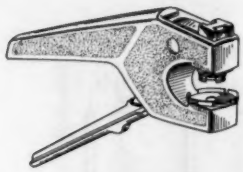


255,639
PATIO BAR AND BAR-B-QUE UNIT
Averil B. Cox, 20239 Arminta, Canoga Park, Calif. 91306
Filed Dec. 8, 1977, Ser. No. 858,714
Term of patent 14 years
Int. Cl. D7—*05;* D12—*14*
U.S. Cl. D7—108

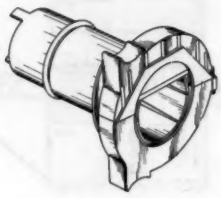


255,640
HANDLE FOR VEGETATION TRIMMER OR SIMILAR ARTICLE
Charles B. Pittinger, Sr., Rte. 1, Box 68, Weatherford, Tex. 76086
Filed Jul. 14, 1977, Ser. No. 815,609
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8

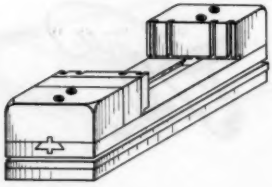
255,641
HAND-TOOL FOR APPLYING GROMMETS AND THE LIKE
Alfred W. Wakeman, Durham, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Aug. 22, 1977, Ser. No. 826,874
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—52



255,642
ROTARY CUT-OFF APPARATUS FOR ROLLED WINDOW SHADES AND THE LIKE
Paul J. Erpenbeck, Muskegon, Mich., and Milton P. Chernack, West Hempstead, N.Y., assignors to Breneman, Inc., Cincinnati, Ohio
Filed Sep. 26, 1977, Ser. No. 836,690
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—60

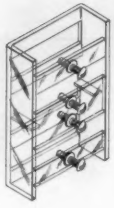


255,643
VISE
Arthur S. Speiser, 4400 Clarkwood Pkwy., Warrensville Hts., Ohio 44128, and Samuel G. Sheterom, Jr., 25 Wintergreen Hill, Painesville, Ohio 44077
Filed Nov. 16, 1977, Ser. No. 851,840
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



255,644
HANDLE
Jean-Francois Moulin, 2 Allée G. Clémenceau, 91000 Evry, France
Filed Sep. 26, 1977, Ser. No. 836,843
Claims priority, application France, Apr. 1, 1977, 77 75574
Term of patent 14 years
Int. Cl. D15—*99;* D8—*06*
U.S. Cl. D8—308

255,645
PLANT STAKE EXTENDER
Joe A. West, 16415 Bear Creek Rd., Boulder Creek, Calif. 95006
Filed Sep. 29, 1977, Ser. No. 837,917
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

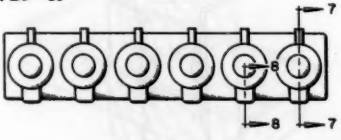


255,646
WALL HANGER
Kenneth F. Fischer, Roseland, N.J., assignor to Acme Metal Goods Mfg. Co., Newark, N.J.
Filed Nov. 7, 1977, Ser. No. 848,912
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—370

255,647
CLOSET BOLT AND NUT UNIT
Martin E. Ismert, III, and Joseph P. Ismert, both of c/o Sious Chief Manufacturing Co., Inc., P.O. Box 282, 4000 Main St., Grandview, Mo. 64030
Filed Mar. 20, 1978, Ser. No. 888,514
The portion of the term of this patent subsequent to Sep. 5, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—387

255,648
COMBINED BOTTLE AND CUP
Bernard J. Bolter, San Mateo, Calif., assignor to United Vintners, Inc., Calif.
Filed Oct. 17, 1977, Ser. No. 843,129
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

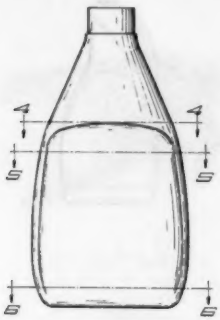
255,649
PACKAGING CONTAINER
Anton H. Clemens, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed Sep. 6, 1977, Ser. No. 830,906
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—18



255,650
BOTTLE
William J. Britt, Greenville, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 23, 1978, Ser. No. 889,580
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—48

255,651
BOTTLE
Daniel C. Wilson, Taylors, S.C., assignor to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Mar. 21, 1978, Ser. No. 888,722
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—60

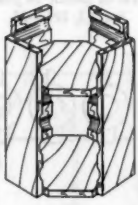
255,652
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 30, 1978, Ser. No. 891,784
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



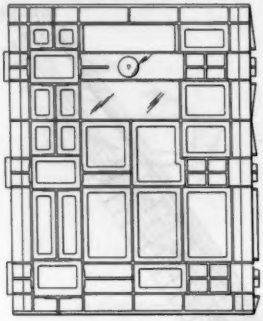
255,653
BOTTLE
Frank F. Lipez, St. Laurent, Canada, assignor to Leabrooke Manufacturing Incorporated, Montreal, Canada
Filed Sep. 26, 1977, Ser. No. 836,910
Claims priority, application Canada, Aug. 29, 1977, 2908772
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—158

255,654
CONTAINER FOR A TOILETRY STICK
Stephen H. Goss, Brooklyn, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Oct. 11, 1977, Ser. No. 840,931
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169

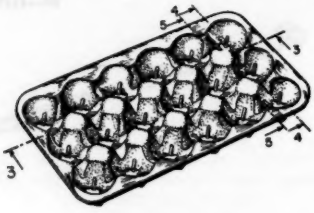
255,655
PACKAGING CONTAINER
Patrick Hart, Towaco, N.J., assignor to Hartstone Inc., Chatham, N.J.
Filed Dec. 15, 1977, Ser. No. 861,099
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



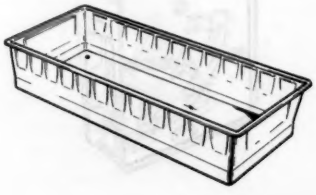
255,656
BOTTLE CARRIER
Alfred G. Stauble, Box 615, Hollis, N.H. 03049
Filed Dec. 27, 1977, Ser. No. 864,691
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



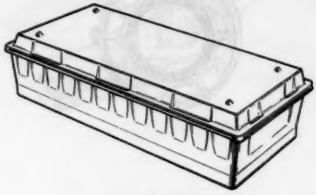
255,657
PACKAGING TRAY OR THE LIKE
John Florian; William Punt, Jr., and Albert C. Verrell, all of Bakersfield, Calif., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 19, 1977, Ser. No. 843,466
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



255,658
PACKAGING TRAY
David R. Dugan, Warsaw, and Kenneth E. Prince, Indianapolis, both of Ind., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 29, 1977, Ser. No. 837,952
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

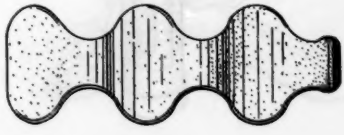


255,659
COMBINED PACKAGING TRAY AND LID
David R. Dugan, Warsaw, and Kenneth E. Prince, Indianapolis, both of Ind., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 29, 1977, Ser. No. 838,046
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



255,660
STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 13, 1978, Ser. No. 942,014
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—285

255,661
LOOSE-FILL PACKING ELEMENT
Harry D. Atkins, 5802 Troost Ave., North Hollywood, Calif. 91601
Filed Sep. 26, 1977, Ser. No. 836,520
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294

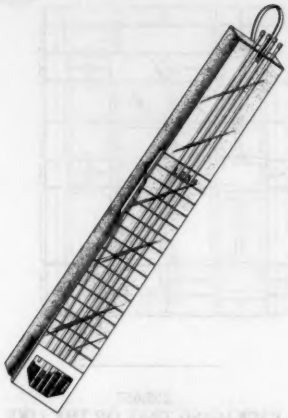


255,662
WATCH
Cherokee J. Gorden, Newbury Park, Calif., assignor to D. G. Originals, a partnership, Newbury Park, Calif.
Filed May 4, 1978, Ser. No. 902,997
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—37

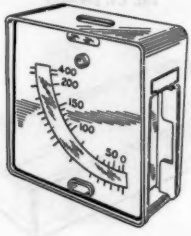
255,663
APERTURE GAUGE FOR HEAVY DUTY VEHICLE BRAKES
Thomas E. Morgan, 11060 Clinton River Dr., Sterling Heights, Mich. 48078
Filed Jan. 9, 1978, Ser. No. 867,914
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64

255,664
TRAILER HITCH LOAD SCALE
Martin H. Wahl, Box 53, R.D. #2, Evans City, Pa. 16033
Continuation-in-part of Ser. No. 691,404, Jun. 1, 1976. This application Jan. 25, 1978, Ser. No. 872,320
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—89

255,665
CARBURETOR TUNER
Timothy P. Lewis, 10217 Parise Dr., Whittier, Calif. 90604
Filed Mar. 16, 1978, Ser. No. 887,454
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96



255,666
AIR VELOCITY GAUGE
Steven O. Buchanan, Michigan City, and Robert W. Butts, Lakeville, both of Ind., assignors to Dwyer Instruments, Inc.
Filed May 5, 1978, Ser. No. 903,226
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—96

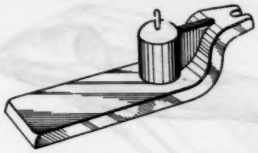


255,667
PUSH BUTTON FOR AN ELEVATOR
Pekka Perjo, Helsinki, Finland, assignor to Kone Osakeyhtio, Helsinki, Finland
Filed Apr. 10, 1978, Ser. No. 895,866
Claims priority, application Finland, Dec. 8, 1977, 77731
Term of patent 14 years
Int. Cl. D10—*06*; D13—*03*
U.S. Cl. D10—108

255,668
IDENTIFICATION BAND OR SIMILAR ARTICLE
Bryan Sidders, Germiston, and Bernard G. MacLarty, Bedfordview, both of South Africa, assignors to Promex Plastics (Proprietary) Limited, Johannesburg, South Africa
Filed Jul. 19, 1977, Ser. No. 817,062
Claims priority, application South Africa, Feb. 16, 1977, 77/0202
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—04

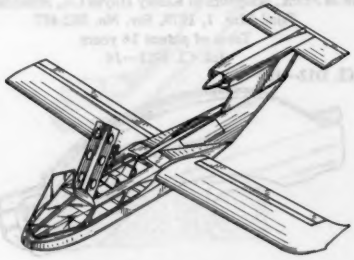
255,669
LOCKET
Matthew J. Trupiano, 20316 Van Antwerp, Harper Woods, Mich. 48225
Filed Oct. 11, 1978, Ser. No. 950,532
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

255,670
PIERCING EARRING HOLDER
Walter B. Ambler, Attleboro, Mass., assignor to Concept Marketing, Inc., Attleboro, Mass.
Filed Jan. 3, 1978, Ser. No. 866,947
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—86



255,671
COMBINED SCREW AND CAGE NOVELTY
Larry Gwynn, Encino, Calif., assignor to CPA, Inc., Laguna Hills, Calif.
Filed Oct. 6, 1978, Ser. No. 949,385
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

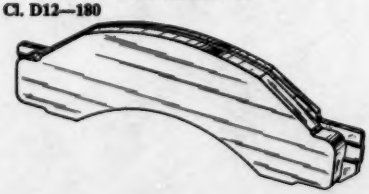
255,672
AMPHIBIOUS CAMPING AND UTILITARIAN AIRCRAFT
Donald A. Stock, Rte. 2, Box 15A, Roanoke, Tex. 76262
Filed Mar. 3, 1977, Ser. No. 774,221
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—3



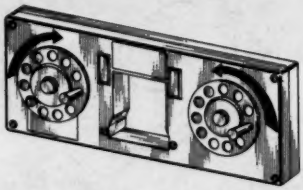
255,673
KYACK
Richard A. Sherwin, North Devon, England, assignor to Guy Mansell, Richmond, England
Filed May 4, 1978, Ser. No. 902,991
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63

255,674
TIRE
Jean Menin, Maurecourt, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, France
Filed Mar. 8, 1978, Ser. No. 884,725
Claims priority, application France, Nov. 16, 1977, 77 40766
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

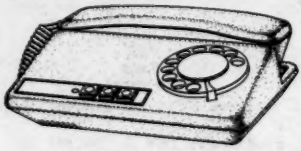
255,675
VEHICLE DISC BRAKE SHOE
Thomas D. Weiser, Dearborn, and Kurt H. Rinker, Ann Arbor, both of Mich., assignors to Kelsey Hayes Co., Romulus, Mich.
Filed Mar. 1, 1978, Ser. No. 882,497
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180

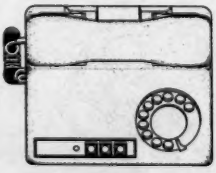


255,676
MICROFILM CASSETTE
George N. McGuire, deceased, late of St. Tammany Parish, La. by Bertie Inez Strickland McGuire, Sheila Lynne McGuire, Cheryl Ann McGuire, heirs, assignor to Bertie Inez Strickland McGuire; Sheila Lynne McGuire and Cheryl Ann McGuire, all of Slidell, La.
Filed Sep. 9, 1977, Ser. No. 832,079
Term of patent 14 years
Int. Cl. D16—*05;* D14—*99*
U.S. Cl. D14—11



255,677
TELEPHONE SET
Toshio Shiono, Yokohama, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Feb. 14, 1978, Ser. No. 877,799
Claims priority, application Japan, Aug. 15, 1977, 52-32062
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53





255,678
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 29, 1979, Ser. No. 7,328
Term of patent 14 years
Int. Cl. D14—*03*; D21—*01*
U.S. Cl. D14—53

255,679
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 29, 1979, Ser. No. 7,330
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D24—53

255,680
TELEPHONE BASE
Clifford D. Read, Almonte, and John F. Tyson, Ottawa, both of Canada, assignors to Northern Telecom Limited
Filed May 12, 1978, Ser. No. 905,415
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

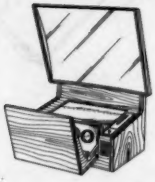
255,681
TELEPHONE HANDSET
Clifford D. Read, Almonte, and John F. Tyson, Ottawa, both of Canada, assignors to Northern Telecom Limited
Filed May 15, 1978, Ser. No. 906,131
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64

255,682

PROJECTION TELEVISION RECEIVER

Chuichi Inoue, Uji, and Minoru Hashimoto, Ibaragi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 17, 1978, Ser. No. 870,149
Claims priority, application Japan, Jul. 18, 1977, 52-28314
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—83

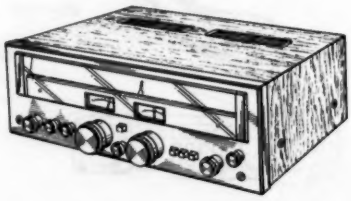


255,683

COMBINED AMPLIFIER AND TUNER

Akira Kato, Chofu, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1978, Ser. No. 874,672
Claims priority, application Japan, Aug. 30, 1977, 52/34531
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96

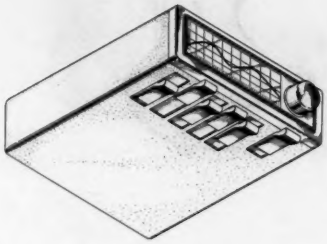


255,684

RESPONSE TRACER AMPLIFIER UNIT HAVING GRAPHIC AMPLIFIER RESPONSE DISPLAY FOR STEREO SOUND SYSTEMS AND THE LIKE

John F. Castagna, Brooklyn, N.Y., assignor to Sparkomatic Corporation, Milford, Pa.

Filed Mar. 21, 1978, Ser. No. 889,122
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—96

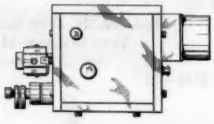


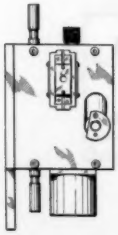
255,685

APPARATUS FOR HONING PIEZO-ELECTRIC CRYSTALS

Stephen Ozimec, 33391 Padina Cir., Laguna Niguel, Calif. 92677

Filed Jul. 27, 1977, Ser. No. 819,376
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—99



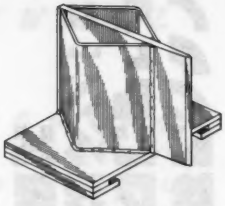


255,686

LOG SPLITTER BLADE

Kenneth L. Duppong, Arvada, and Randall E. Toler, Broomfield, both of Colo., assignors to Speeco, Incorporated, Lakewood, Colo.

Filed May 20, 1977, Ser. No. 798,917
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—139

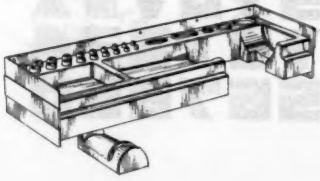


255,687

COMBINED RACK FOR DRILLING MACHINES AND SUPPORT HOOK THEREFOR

Ole S. Ravn, Farum, Denmark, assignor to Stig Ravn A/S, Farum, Denmark

Filed Jun. 1, 1978, Ser. No. 911,509
Claims priority, application Denmark, Dec. 1, 1977, 927/77
Term of patent 14 years
Int. Cl. D15—*09*; D6—*04*
U.S. Cl. D15—140

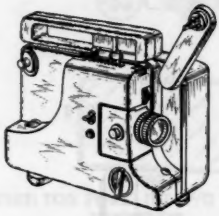


255,688

FILM PROJECTOR

Hans-Ulrich Schade, Pfuhl, Fed. Rep. of Germany, assignor to Foto-Quelle GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,320
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 109
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—23



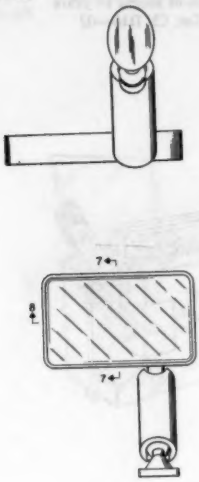
255,689

ELECTRONIC FLASH UNIT

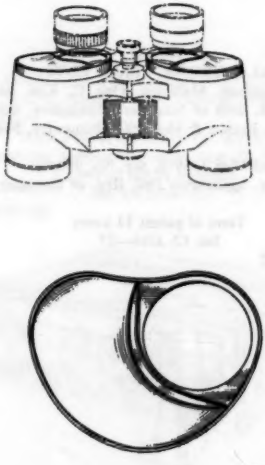
Chong Ap, Singapore, Malaysia; Ong C. Kim, and Ernst-Gunther Zobel, both of Singapore, Singapore, assignors to Rollei, Werke, Franke & Heidecke, Brunswick, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,786
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 1137
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

255,690
MAGNIFYING DEVICE FOR DETAIL WORK
Helen I. Tourtellotte, and John F. Tourtellotte, both of 3757 Rock Hill Rd., Birmingham, Ala. 35223
Filed Mar. 16, 1978, Ser. No. 887,451
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—56



255,691
BINOCULAR COVER PLATE
Claus O. Huckenbeck, Westlake Village, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Nov. 23, 1977, Ser. No. 854,500
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



255,692
HIEROGLYPHIC FONT
Robert G. Fennell, 54 Ellingwood Ave., Stoney Creek, Ontario, Canada (L8E 1B9)
Filed Aug. 22, 1978, Ser. No. 934,941
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—25

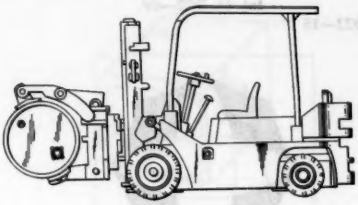
255,693
FONT OF CHARACTERS
Carl O. Bombarger, Jr., Elmira, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.
Filed May 18, 1978, Ser. No. 907,315
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—27

255,694
TYPE FONT
William R. Bitticker, Centerville, Ohio, assignor to The Mead Corporation
Filed Jan. 23, 1978, Ser. No. 871,768
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—28

255,695
COMBINED PEN HOLDER AND CLOCK
Chii T. Yu, Taipei, Taiwan, assignor to Sterling Electronics Corp., Taipei, Taiwan
Filed Mar. 3, 1978, Ser. No. 883,240
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—77

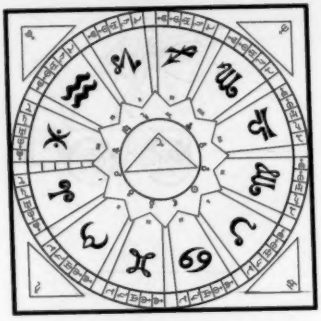
255,696
TOY PAY LOADER
Victor J. Fratarcangeli, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 6, 1978, Ser. No. 867,521
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—132

255,697
COMBINED TOY FORKLIFT AND TOY BARREL THEREFOR
Kiyoji Asano, 2-27-23, Sumida, Sumida-ku, Tokyo, Japan
Filed Dec. 2, 1975, Ser. No. 637,018
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134

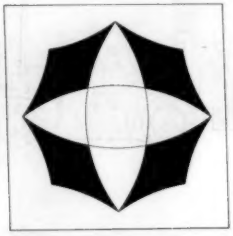


255,698
TENNIS BALL RETRIEVER
Donald O. Wright, 26333 Belle Porte Ave., Harbor City, Calif. 90710
Filed Apr. 4, 1978, Ser. No. 893,500
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D21—206

255,699
ASTROLOGICAL GAME BOARD
Robert K. Myers, Willoughby, Ohio, assignor to Mariann Cade, South Euclid, Ohio
Filed Dec. 19, 1977, Ser. No. 862,145
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—241

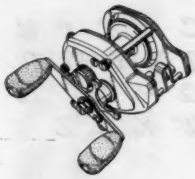


255,700
GUN TARGET
Charles R. Dulude, 33 Burnside Ave., East Hartford, Conn. 06108
Filed Apr. 7, 1978, Ser. No. 894,639
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—15



255,701
LINE GUIDE FOR A FISHING ROD
Shigeru Yamamoto, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Sep. 1, 1978, Ser. No. 939,042
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24

255,702
FISHING REEL
Kanji Iinuma, Kogaeni, Japan, assignor to Daiwa Seiko, Inc., Higashikurume, Japan
Filed Jan. 19, 1978, Ser. No. 870,777
Claims priority, application Japan, Dec. 26, 1977, 52/36498
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

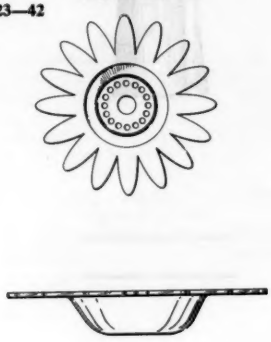


255,703
FISHING LURE
Leslie W. Kent, P.O. Box 3162, Tyler, Tex. 75701
Filed Aug. 3, 1978, Ser. No. 930,673
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

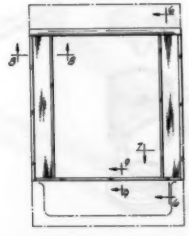
255,704
FISHING LURE OR SIMILAR ARTICLE
Ronald A. Helfenstine, Fort Worth, and Richard W. McDaniel, Hurst, both of Tex., assignors to Sports Marketing, Inc., Fort Worth, Tex.
Filed Sep. 26, 1978, Ser. No. 945,859
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

255,705
ARTIFICIAL FISH LURE
Jimmie L. Standifer, 14213 Stansbury, Detroit, Mich. 49223
Filed Aug. 25, 1978, Ser. No. 936,766
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

255,706
SINK STRAINER COVER
John M. Adam, 2404 Powers Ferry Rd., Marietta, Ga. 30062
Filed Nov. 18, 1977, Ser. No. 852,938
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42

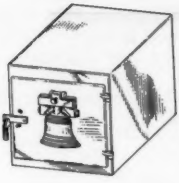


255,707
FRAME FOR A SHOWER DOOR
Nicholas J. Obradovits, St. Louis, Mo., assignor to Shower Enclosure Service Company, St. Louis, Mo.
Filed Feb. 1, 1978, Ser. No. 874,550
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



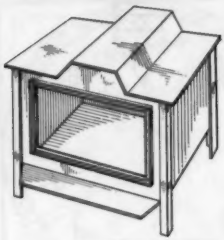
255,708
INCENSE BURNER
Gerald L. Allen, 6765 Portage Ave., and Craig A. Chapman, 5417 Clem Rd., both of Portage, Ind. 46368
Filed Jun. 19, 1978, Ser. No. 917,004
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D23—78

255,709
STOVE
George H. Lester, Metal Design Mfg., Inc., 20 Willard Ave., Newington, Conn. 06111
Filed Mar. 16, 1978, Ser. No. 887,458
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

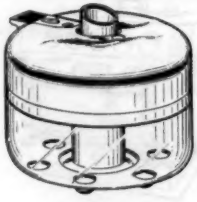


255,710
FIREPLACE HEATER
Friedrich W. Heine, 577 Garfield, P.O. Box 10924, Eugene, Oreg. 97401
Filed Apr. 10, 1978, Ser. No. 894,621
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

255,711
STOVE
Theodore Abraham, 126 Gloucester St., Cornwall, Ontario, K6H 3W4, Canada
Filed Apr. 14, 1978, Ser. No. 896,260
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



255,712
HUMIDIFIER
Masao Chihara, Matsudo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Mar. 6, 1978, Ser. No. 884,026
Claims priority, application Japan, Sep. 21, 1977, 52-37588
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146

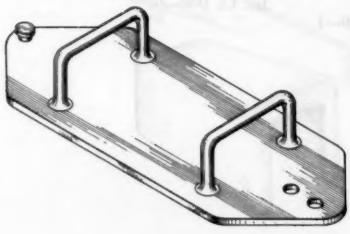


255,713
DENTAL BUR TOOL
Paul D. Sturges, Newberg, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.
Filed Feb. 15, 1978, Ser. No. 878,174
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

255,714
AMALGAM WELL USED IN DENTISTRY
Joseph J. Lancellotti, 8 Starr Rd., East Brunswick, N.J. 08816
Filed Feb. 27, 1978, Ser. No. 881,866
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

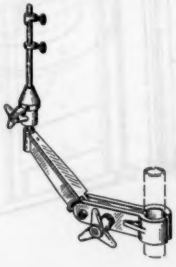
255,715
SURGICAL CLAMP
Harold A. Markham, 6637 Drexel Ave., Los Angeles, Calif. 90048
Filed Oct. 10, 1978, Ser. No. 950,220
Term of patent 14 years
Int. Cl. D24—*02;* D8—*08*
U.S. Cl. D24—27

255,716
BABY BOTTLE STRAP
Alicia P. Giesa, 492 School House La., Devon, Pa. 19333
Filed Oct. 11, 1977, Ser. No. 841,158
Term of patent 14 years
Int. Cl. D24—*104*
U.S. Cl. D24—48

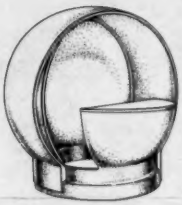


255,717
SURGICAL STRAP OR SIMILAR ARTICLE
Jack Levine, 70 E. 10th St., New York, N.Y. 10003
Filed Jan. 13, 1978, Ser. No. 869,117
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

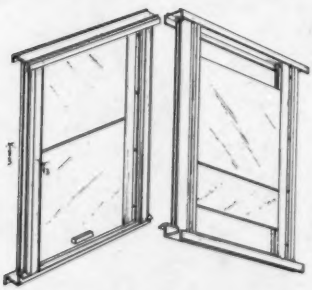
255,718
ARTICULAR ARM FOR MOUNTING AND POSITIONING A HEAD MODEL FOR DENTAL STUDENT USE
Roderick S. Hunt, Portland, Oreg., assignor to Adcoa, Inc., Portland, Oreg.
Filed Mar. 2, 1978, Ser. No. 883,042
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—99



255,719
KIOSK
Michel A. Panzini, Senneville, Canada, assignor to Unibisc Inc., Montreal, Canada
Filed Apr. 10, 1978, Ser. No. 895,290
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



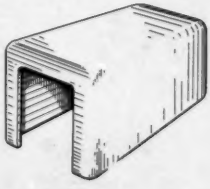
255,720
WINDOW
John H. Shugg, 5 Elonara Ct., Glen Waverley, Victoria 3150, Australia
Filed Oct. 13, 1977, Ser. No. 841,992
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—52



255,721
BOOK LAMP
Jesse K. Makainai, Jr., Kaneohe, Hi.
Filed Jan. 11, 1978, Ser. No. 868,510
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—60

255,722
HAIR DRYER
Sung Jae Shin, Yongdu 2-Dong 739-4 Dongdaemoon-Gu, Seoul, Rep. of Korea; John W. Christensen, 28283 Tahoe Ct., Hayward, Calif. 94545, and Paul S. Han, 307 Dolphin Isle, Foster City, Calif. 94404
Filed Mar. 13, 1978, Ser. No. 885,710
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13

255,723
ANIMAL SHELTER
Arthur V. Anderson, 272 S. 13th, Sharpsville, Pa. 16150
Filed Jan. 17, 1978, Ser. No. 870,264
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

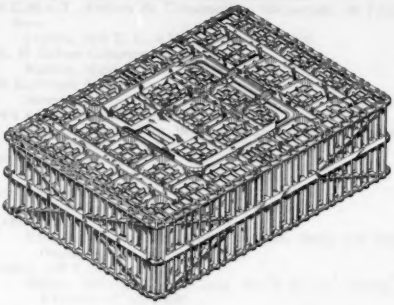


255,724

POULTRY COOP OR SIMILAR ARTICLE

James C. Carroll, Hopkinsville, Ky., and Lewis T. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1978, Ser. No. 959,954
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

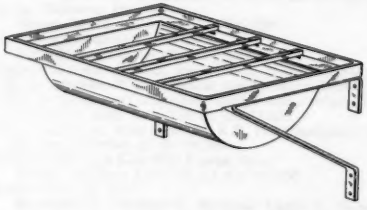


255,725

FOAL FEEDER

Donald M. Kitterman, 4100 Riverside, Kansas City, Mo. 64150

Filed Jun. 12, 1978, Ser. No. 914,848
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

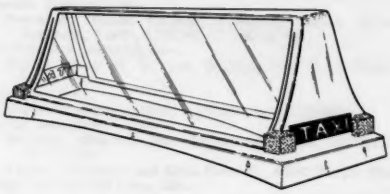


255,726

VEHICLE TOP SIGN HOUSING

Fred W. Leuthesser, Knoxville, Tenn., assignor to Benco Industries, Inc., Knoxville, Tenn.

Filed Sep. 28, 1977, Ser. No. 837,595
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D26—31

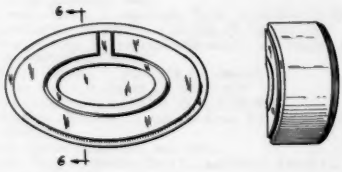


255,727

SOAP BAR

Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 21, 1978, Ser. No. 944,463
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D28—8.1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Bixby, William E., 4,210,710, Cl. 430-56.000.

A.C.M.A.T. Ateliers de Constructions Mecaniques de l'Atlantique: *See*—
Legueu, Paul E. R., 4,210,355, Cl. 296-19.000.

A. H. Robins Company, Inc.: *See*—
Munson, Harry R., Jr., 4,210,666, Cl. 424-275.000.

A Raymond: *See*—
Junemann, Dietrich; and Henning, Hans, 4,210,356, Cl. 296-84.00A.

AB Akerlund & Rausing: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

AB Medipharm: *See*—
Kvanta, Endre, 4,210,673, Cl. 426-53.000.

Abaline Limited: *See*—
Johnson, Ian L., 4,209,917, Cl. 34-149.000.

Abe, Shunzo: *See*—
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.

Aberg, Ulf L.: *See*—
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., 4,210,432, Cl. 65-4.00R.

Abrams, Abraham: *See*—
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.

Abrams, Henry H., III. Flexible surfboard. 4,209,867, Cl. 9-310.00E.

Acevedo, Ignacio. Tool handle assembly with freely-reversible socket member. 4,210,185, Cl. 145-76.000.

ACF Industries, Incorporated: *See*—
Atkinson, Eulas R., 4,209,884, Cl. 29-157.10R.

Adachi, Masahiro, to Nissan Motor Company, Limited. Vehicle having side-rear surveillance radar with antenna reflector assembled with rearview mirror. 4,210,357, Cl. 296-84.00B.

Adiletta, Joseph G., to Pall Corporation. Process for preparing hydrophobic porous fibrous sheet material of high strength and porosity and product. 4,210,697, Cl. 428-272.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Fournet-Fayas, Christian, 4,210,793, Cl. 219-10.55F.

AGFA-Gevaert, A.G.: *See*—
Fauth, Gunter, 4,210,392, Cl. 354-21.000.
Hoffmann, Klaus; and Doppner, Detlef, 4,210,918, Cl. 346-75.000.
Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.

AGFA-GEVAERT N.V.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.

Aiba, Masahiko, to Sharp Kabushiki Kaisha. Ink jet system printer including plural ink droplet issuance units for one column printing. 4,210,919, Cl. 346-75.000.

Aibe, Toshio: *See*—
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, 4,210,628, Cl. 423-239.000.

Aihara, Takayuki: *See*—
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.

Airway Industries, Inc.: *See*—
Weiner, Jay H., 4,210,230, Cl. 190-43.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Mori, Keiji, 4,210,359, Cl. 296-222.000.

Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, to Hitachi, Ltd. Semiconductor controlled rectifier with configured cathode to eliminate hot-spots. 4,210,924, Cl. 357-38.000.

Akai, Tsutomu, to Yoshida Kogyo K.K. Pivot mechanism for pivoted windows. 4,209,946, Cl. 49-390.000.

Akechi Taikarenga Kabushiki Kaisha: *See*—
Kondo, Masanao, 4,210,264, Cl. 222-591.000.

Akimov, Jury A.: *See*—
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.

Akishino, Katsuo: *See*—
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.

Akiyama, Taichiro: *See*—
Kirikae, Ichiro; and Akiyama, Taichiro, 4,209,919, Cl. 35-17.000.

Akiyama, Takuya: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.

Akiyama, Toshiyuki: *See*—
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, 4,210,942, Cl. 360-65.000.

Aktiebolaget Atomenergi: *See*—
Margen, Peter H. E.; and Naslund, Rolf P., 4,210,203, Cl. 165-163.000.

Akzo N.V.: *See*—
Cornelissens, Emery G. P., 4,210,550, Cl. 252-90.000.

Akzona Incorporated: *See*—
Bergfeld, Manfred; and Zengel, Hans G., 4,210,602, Cl. 260-576.000.
Castro, Anthony J.; and Stoll, James W., 4,210,556, Cl. 525-6.000.

Albany International Corp.: *See*—
Coplan, Myron J.; and Sebring, Robert E., 4,210,536, Cl. 210-321.00R.

Albert-Frankenthal AG: *See*—
Fischer, Emil, 4,210,268, Cl. 227-81.000.

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Aldrich, Allyn M., to Sundstrand Corporation. Power drive unit. 4,210,066, Cl. 91-506.000.

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Steinlein, Rudolf F., 4,210,265, Cl. 224-48.00A.

Allen-Bradley Company: *See*—
Waltz, Richard W., 4,210,948, Cl. 361-76.000.

Allen, Charles M.: *See*—
Newhouse, Paul D.; and Allen, Charles M., 4,210,913, Cl. 343-123.000.

Allen & Hanburys Limited: *See*—
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., 4,210,140, Cl. 128-266.000.

Allen, Joseph C.; and Tate, Jack F., to Texaco Inc. Secondary recovery process. 4,210,205, Cl. 166-271.000.

Allied Chemical Corporation: *See*—
Marshall, Robert M.; and Dardoufas, Kimon C., 4,210,700, Cl. 428-395.000.
Ray, Ranjan, 4,210,443, Cl. 75-123.00K.

Allis-Chalmers Corporation: *See*—
Nace, Donald W., 4,210,408, Cl. 415-163.000.

Alpine Roomaire Systems, Inc.: *See*—
Golstein, Jerome J., 4,210,429, Cl. 55-279.000.

Aluminum Company of America: *See*—
Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., 4,210,012, Cl. 72-235.000.
Davidson, John J.; and Smith, David A., 4,210,507, Cl. 204-181.00R.
Mutschler, Thomas A.; and Zimmerman, Gary J., 4,210,513, Cl. 204-225.000.
Schrecker, H. Dale, 4,210,259, Cl. 220-455.000.

Aluminum Pechiney: *See*—
Morel, Paul; and Dugois, Jean-Pierre, 4,210,514, Cl. 204-243.00M.

Alza Corporation: *See*—
Higuchi, Takeru, 4,210,139, Cl. 128-260.000.

Amberg, Christopher P.; and Belcher, Samuel L., to Owens-Illinois, Inc. Pour spout lid. 4,210,256, Cl. 220-254.000.

Amerace Corporation: *See*—
Borgstrom, Alan D., 4,210,381, Cl. 339-115.00C.

American Can Company: *See*—
Gillespie, William S.; and Inglis, Hal L., 4,210,477, Cl. 156-203.000.
Kuchenbecker, Morris W., 4,210,246, Cl. 206-461.000.
Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., 4,210,069, Cl. 93-36.00M.
Mitchell, Richard P., 4,210,674, Cl. 426-107.000.
Murray, Lee J., 4,210,566, Cl. 260-31.80T.
Radtke, Charles S., 4,210,257, Cl. 220-269.000.
Schlesinger, Sheldon I.; and Cochran, Veronica, 4,210,449, Cl. 430-183.000.

American Carrier Equipment, Inc.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.

American Cyanamid Company: *See*—
Dundon, John P.; Klingsberg, Erwin; and Bright, John H., 4,210,601, Cl. 260-570.00D.
Halmos, Imre A., 4,210,593, Cl. 260-397.70R.
Raghu, Sivaraman; and Hoffmann, Arthur K., 4,210,760, Cl. 548-320.000.
Wang, Samuel S.; and Lewellyn, Morris E., 4,210,531, Cl. 210-51.000.

American Home Products Corporation: *See*—
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.

American Hospital Supply Corporation: *See*—
Choksi, Pradip V.; and Johnston, Donald L., 4,210,173, Cl. 137-512.300.

American Microsystems, Inc.: *See*—
Gregorian, Roubik, 4,210,872, Cl. 330-9.000.

Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., to Corning Glass Works. Blood sample collecting means. 4,210,026, Cl. 73-425.600.

AMP Incorporated: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., 4,210,376, Cl. 339-17.0LC.
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.

Amrani, David. Process for separation and isolation of AHF and fibronectin from blood plasma. 4,210,580, Cl. 260-112.00B.

Amsted Industries Incorporated: *See*—
McGee, Sherwood W., 4,210,468, Cl. 148-12.400.

Anderson, Arthur A.: *See*—
Dent, Enid-Mary; and Anderson, Arthur A., 4,209,945, Cl. 47-84.000.

Anderson, Donald-W.: *See*—
Neubert, Terry C.; and Anderson, Donald W., 4,210,475, Cl. 156-110.00A.

Anderson, James H., to Sea Solar Power. Dynamic positioning of sea thermal power plants by jet propulsion. 4,209,991, Cl. 60-641.000.

Andersson, Roy E. P.; and Bohm, Jan A., to Boliden Aktiebolag. Method and apparatus for controllably supplying material to a rod mill in accordance with power consumption of the rod mill motor. 4,210,290, Cl. 241-30.000.

Ando, Shoichi; Inaba, Kiminobu; and Yoshida, Tomoaki, to Foundation: The Assn. of Japan General Denistry, The. X-Ray imaging diagnostic apparatus with low X-ray radiation. 4,210,812, Cl. 250-416.0TV.

Andresen, Jens N., to Danfoss A/S. Servo motor operated by a heatable expansible substances. 4,209,989, Cl. 60-527.000.

Andresen, Jens N., to Danfoss A/S. Servo motor. 4,210,030, Cl. 74-43.000.

Andrysick, Chester A., to Corning Glass Works. Forming glass articles by using a spin plate. 4,210,433, Cl. 65-66.000.

Ankenman, Dale E. Quick mounting mechanism for agricultural implement. 4,210,210, Cl. 172-272.000.

Annis, Myron C., to Hooker Chemicals & Plastics Corp. Phenolic resins with improved low temperature processing stability. 4,210,732, Cl. 525-501.000.

Antos, George J., to UOP Inc. Hydrocarbon conversion with a superactive multimetallic catalytic composite containing two different types of rhenium sites. 4,210,523, Cl. 208-139.000.

Antos, George J., to UOP Inc. Hydrocarbon conversion with a superactive multimetallic catalytic composite containing two different types of rhenium sites. 4,210,524, Cl. 208-139.000.

Antos, George J., to UOP Inc. Activated and attenuated multimetallic catalytic composite. 4,210,561, Cl. 252-441.000.

Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with a superactive multimetallic catalytic composite for use therein. 4,210,769, Cl. 585-379.000.

Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, to Hitachi, Ltd. Assembly line for parts of electronic and other equipments. 4,209,898, Cl. 29-783.000.

Apple Computer, Inc.: *See*—
Wozniak, Stephen G., 4,210,959, Cl. 364-200.000.

Apple, Wayne R. Apparatus for automatic ventilation of the lungs. 4,210,136, Cl. 128-204.210.

Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, to Corning Glass Works. Fluorine out-diffused optical device and method. 4,210,386, Cl. 350-96.310.

Argade, Shyam D.: *See*—
Patil, Arvind S.; and Argade, Shyam D., 4,210,515, Cl. 204-266.000.

Argelich, Termes y Cia., S.A.: *See*—
Trullas, Isidro F., 4,210,005, Cl. 68-148.000.

Argus Chemical Corporation: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.

Arias, Henry: *See*—
Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., 4,210,331, Cl. 273-120.00R.

Armco Inc.: *See*—
Byrd, Fred; and Fisher, James A., 4,210,097, Cl. 118-65.000.

Armstrong, William J.: *See*—
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.

Arndt, Emanuel: *See*—
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Arnoldy, Adrian F. Tub grinder control. 4,210,289, Cl. 241-27.000.

Arthur D. Little, Inc.: *See*—
Loeffler, Herbert H., 4,209,866, Cl. 9-304.000.

Arthur G. McKee & Company: *See*—
Wong, Wang-Mo, 4,210,406, Cl. 203-46.000.

Artweger-Industrie-Gesellschaft m.b.H.: *See*—
Artweger, Wolfgang, 4,210,122, Cl. 126-432.000.

Artweger, Wolfgang, to Artweger-Industrie-Gesellschaft m.b.H. Energy conversion apparatus. 4,210,122, Cl. 126-432.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Ogawa, Ryota, 4,210,387, Cl. 350-187.000.

Ascoli, Enzo, to Gillette Company, The. Electric shavers. 4,210,832, Cl. 310-50.000.

Ash, David B.: *See*—
Dicken, John A., Jr.; and Ash, David B., 4,210,285, Cl. 239-251.000.

Astl, Jaromir. Remote control valve for reverse osmosis water purifier. 4,210,533, Cl. 210-136.000.

Astra Lakemedel Aktiebolag: *See*—
Cooke, Ernest, 4,210,670, Cl. 424-324.000.

Atkinson, Eulas R., to ACF Industries, Incorporated. Method of forming valve seats. 4,209,884, Cl. 29-157.10R.

Atlas Copco Aktiebolag: *See*—
Gustavson, Fredrik, 4,210,852, Cl. 318-459.000.

Atlas Technologies Inc.: *See*—
Churla, Daniel, 4,210,374, Cl. 339-14.00L.

Atlas Tool & Manufacturing Co.: *See*—
White, Kenneth W., 4,210,340, Cl. 280-43.170.

Auburn Research Foundation: *See*—
Huffman, Dale L., 4,210,677, Cl. 426-272.000.

Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research and Development Company. Decomposition of cumene hydroperoxide with a halogen-substituted thiophenol catalyst. 4,210,606, Cl. 568-385.000.

Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., to Gulf Research and Development Company. Decomposition of cumene hydroperoxide using a stable nitrosonium or nitronium salt as the catalyst. 4,210,607, Cl. 568-385.000.

Automobile Association Limited, The: *See*—
Robbins, Ralph G.; and Bates, Victor E., 4,210,347, Cl. 283-35.000.

Automobiles Peugeot: *See*—
Dore, Jacques P., 4,210,002, Cl. 64-32.00F.

Avadani, Subramanya, to Zenith Radio Corporation. Color CRT shadow mask and method of making same. 4,210,843, Cl. 313-403.000.

Baboian, Robert, to Texas Instruments Incorporated. Method of assembly of an anti-corrosion anode connector system. 4,209,896, Cl. 29-855.000.

Bachman, David L.; and Voorhees, Francis W., to Corning Glass Works. Method for making vitreous carbon coatings on glass fibers. 4,210,431, Cl. 65-3.00C.

Bachman, Walter S.; and Cedrone, Nicholas J., to Daymarc Corporation. Magnetic storage system and method for an axial lead sorter. 4,209,959, Cl. 53-475.000.

Bader, John P.: *See*—
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.

Baekelmans, Paul; and Bernard, Albert, to Solvay & Cie. Particles of titanium trichlorides which can be used for the stereospecific polymerization of alpha-olefines. 4,210,736, Cl. 526-142.000.

Baggett, Joseph M., to Dow Chemical Company, The. Phenolphthalein-dihydroxy aromatic compound polycarbonates. 4,210,741, Cl. 528-196.000.

Bahnfleth, William A.: *See*—
McGee, Mary Ann C.; and Bahnfleth, William A., 4,210,372, Cl. 308-189.00R.

Bailey, Jack H.; and Ottaway, Gerald H., to DiscoVision Associates. Video player and/or recorder with Hadamard transform. 4,210,931, Cl. 358-128.500.

Bailey, Peter E. Article strapping. 4,209,958, Cl. 53-553.000.

Baker, Fred E., to General Electric Company. Bag sealer lid assembly. 4,210,068, Cl. 93-8.00R.

Baker International Corporation: *See*—
McStravick, David M.; and Roberts, William M., 4,210,207, Cl. 166-330.000.
Motsinger, James V., 4,210,017, Cl. 73-139.000.

Baker, Richard A. Counting device. 4,210,093, Cl. 116-222.000.

Baker, Richard H., to Exxon Research & Engineering Co. Switching circuit. 4,210,826, Cl. 307-254.000.

Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Pyridyloxypropanolamines. 4,210,653, Cl. 424-263.000.

Balter, Jack S., to Rockwell International Corporation. Axle assembly. 4,210,220, Cl. 180-70.00R.

Banchieri, Carlo, to Industrie Pirelli S.p.A. Pneumatic tires for motor vehicles having compression-stressed sidewalls. 4,210,188, Cl. 152-353.00C.

Banko, Anton. Surgical instrument with flexible blade. 4,210,146, Cl. 128-305.000.

Bankoku Needle Manufacturing Company Ltd.: *See*—
Takahashi, Masamitsu, 4,210,239, Cl. 206-45.130.

Banse, Wilhelm: *See*—
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.

Bantsekin, Viktor I.: *See*—
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.

Baran, Joseph: *See*—
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.

Baribeau, Gary A., to Minnesota Mining and Manufacturing Company. Electrical wire connection. 4,210,378, Cl. 339-97.00R.

Barker, Henry P., to General Electric Company. Process and apparatus for the drying of resinous materials. 4,209,912, Cl. 34-10.000.

Barnum, Edward F.: *See—*
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.

Barr & Stroud Limited: *See—*
Berry, Peter J.; and Runciman, Herbert M., 4,210,810, Cl. 250-347.000.

BASF Aktiengesellschaft: *See—*
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, 4,210,583, Cl. 260-156.000.
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, 4,210,414, Cl. 8-639.000.
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

BASF Farben & Fasern Aktiengesellschaft: *See—*
Hoppe, Karl; and Strauss, Udo, 4,210,506, Cl. 204-181.00C.

BASF Wyandotte Corporation: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.
Login, Robert B.; and Dutton, Daniel R., 4,210,685, Cl. 427-361.000.
Patil, Arvind S.; and Argade, Shyam D., 4,210,515, Cl. 204-266.000.
Patton, John T., Jr.; and McBrayer, Robert L., 4,210,728, Cl. 521-160.000.

Baskin, William H. Photographic printing apparatus. 4,210,398, Cl. 355-54.000.

Basta, Michael I.: *See—*
Morse, Phillip H.; Noce, Louis O.; and Basta, Michael I., 4,210,178, Cl. 137-625.500.

Bateman, John H., to Ciba-Geigy Corporation. Adducts containing epoxide groups, from hydantoin trisepoxides and binuclear hydantoins. 4,210,744, Cl. 528-363.000.

Bates, Victor E.: *See—*
Robbins, Ralph G.; and Bates, Victor E., 4,210,347, Cl. 283-35.000.

Batten, Carmen E., to United States of America, National Aeronautics and Space Administration. Visible and infrared polarization ratio spectroreflectometer. 4,210,401, Cl. 356-369.000.

Battersby, Horace V. Boat anchor. 4,210,092, Cl. 114-299.000.

Baudot, Jean-Jacques, to Societe Anonyme de Telecommunications. Optical panoramic survey-systems. 4,210,385, Cl. 350-16.000.

Bauer, Robert; and Hostettler, Hans U., to Hoffmann-La Roche Inc. Antiseborrheic preparations. 4,210,654, Cl. 424-263.000.

Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, to Ortho Diagnostics Inc. Detection of fibrin monomer and composition therefor. 4,210,420, Cl. 23-230.00B.

Baumann, John; Abrams, Abraham; and Broitman, Marvin, to Univawe, Inc. Liquid oil feeders. 4,210,225, Cl. 184-28.000.

Baumgarth, Manfred: *See—*
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.

Baxter Travenol Laboratories, Inc.: *See—*
Fabisiewicz, Eugene, 4,210,479, Cl. 156-273.000.
Jess, Thurman S.; and Zissimopoulos, Nicholas, 4,210,138, Cl. 128-214.00E.

Bayer Aktiengesellschaft: *See—*
Gehrke, Gunter; and Hohmann, Walter, 4,210,413, Cl. 8-471.000.
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.
Klein, Johann, 4,210,154, Cl. 128-685.000.

Bayusik, Michael J.; and Chen, Peter H., to R. T. French Co., The. Method of sterilizing spices. 4,210,678, Cl. 426-521.000.

Beasom, James D., to Harris Corporation. Integrated amplifier with adjustable offset voltage. 4,210,875, Cl. 330-261.000.

Beccaris, Carlo, to Societe Anonyme Francaise du Ferodo. Clutch mechanisms with two clutch plates. 4,210,232, Cl. 192-48.800.

Becker, Adolf: *See—*
Muller, Heinz; and Becker, Adolf, 4,210,604, Cl. 260-583.00R.

Beckman Instruments, Inc.: *See—*
Emmons, William D., 4,210,565, Cl. 260-29.6TA.
Handschuh, Gerald J., 4,210,557, Cl. 252-408.000.

Beecham Group Limited: *See—*
Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., 4,210,662, Cl. 424-274.000.
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.

Beechey, Charles M.: *See—*
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.

Beer, Richard L.: *See—*
Davis, Frederick C.; and Beer, Richard L., 4,210,118, Cl. 126-25.00R.

Beerens, Josephus J., to Hydraudyne B.V. Method and device for braking the speed of movement of the piston of a plunger-cylinder device. 4,210,064, Cl. 91-394.000.

Belcher, Samuel L.: *See—*
Amberg, Christopher P.; and Belcher, Samuel L., 4,210,256, Cl. 220-254.000.

Belenson, Mark I. Camera bag. 4,210,186, Cl. 150-52.00J.

Belhomme, Charles J. G.: *See—*
Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., 4,210,800, Cl. 219-544.000.

Bell & Howell Company: *See—*
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.
Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., 4,210,940, Cl. 360-33.000.

Bell Telephone Laboratories, Incorporated: *See—*
Chandross, Edwin A.; and Sharpe, Louis H., 4,210,704, Cl. 428-414.000.
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., 4,210,825, Cl. 307-221.00D.
Fraser, Donald L., Jr.; and Tompsett, Michael F., 4,210,950, Cl. 361-329.000.
North, James C.; and Schinke, David P., 4,210,923, Cl. 357-30.000.

Belletire, John L., to Pfizer Inc. Halogen substituted benzopyran- and benzothiopyran-4-carboxylic acids. 4,210,663, Cl. 424-275.000.

Belletire, John L.: *See—*
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., 4,210,667, Cl. 424-281.000.

Bellot, Jean, to Societe Nouvelle des Acieries de Pompey. Magnesium-free, fine-grained structural steel with improved machinability and workability. 4,210,444, Cl. 75-124.000.

Belov, Jury N.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Beltran, Adrian M.: *See—*
Schilling, William F.; and Beltran, Adrian M., 4,210,269, Cl. 228-193.000.

Bendix Autolite Corporation: *See—*
Grimes, Donald A., 4,210,510, Cl. 204-195.00S.

Bendix Corporation, The: *See—*
Dyce, John W.; and Buczak, Ronald F., 4,209,893, Cl. 29-522.00R.

Bennett, Elmer T. Finger stick blood collection apparatus. 4,210,156, Cl. 128-763.000.

Bennstedt, Leif-Ake: *See—*
Loqvist, Kaj-Ragnar; and Bennstedt, Leif-Ake, 4,210,497, Cl. 204-26.000.

Benteler Werke Aktiengesellschaft: *See—*
Klatzer, Stefan; and Dickhoff, Winfried, 4,210,467, Cl. 148-12.00R.

Berber, Viktor A.: *See—*
Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A., 4,210,276, Cl. 233-31.000.

Berbner, Heinz: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.

Berg, Joseph E.; and Brown, Randolph E., Jr., to Precision Thin Film Corporation. Method and apparatus for depositing film on a substrate, and products produced thereby. 4,210,701, Cl. 428-409.000.

Berges, David A., to SmithKline Corporation. 7-Acylamino-3-[1-[2-(carboxymethylamino)ethyl]tetrazol-5-ylthio methyl]-3-cephem-4-carboxylic acids. 4,210,587, Cl. 548-251.000.

Bergfeld, Manfred; and Zengel, Hans G., to Akzona Incorporated. Process for the preparation of asymmetrical N-phenyl-N'-substituted para-phenylene diamines. 4,210,602, Cl. 260-576.000.

Bergson, Gustav. Electrolytic hygrometer improvement. 4,210,508, Cl. 204-195.00W.

Bergstrom, Rolf: *See—*
Johansson, Sigge; and Bergstrom, Rolf, 4,209,978, Cl. 59-27.000.

Bernard, Albert: *See—*
Baekelmans, Paul; and Bernard, Albert, 4,210,736, Cl. 526-142.000.

Bernardin, Frederick E.: *See—*
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.

Bernasconi, Raymond: *See—*
Schenker, Karl; and Bernasconi, Raymond, 4,210,655, Cl. 424-267.000.

Bernatsek, Vladislav V.: *See—*
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.

Berrie, John S.; and Woolley, Graham E., to Imperial Chemical Industries Limited. Manufacture of magnesium carbonate and calcium sulphate from brine mud. 4,210,626, Cl. 423-166.000.

Berry, Fred M., to International Medical Electronics Ltd. Method and apparatus for measuring and controlling the output power of a short-wave therapy apparatus. 4,210,152, Cl. 128-422.000.

Berry, Peter J.; and Runciman, Herbert M., to Barr & Stroud Limited. Radiation scanning system. 4,210,810, Cl. 250-347.000.

Berry, Robert W., Jr., to Fansteel Inc. Drill with replaceable inserts. 4,210,406, Cl. 408-223.000.

Bertin & Cie: *See—*
Rouquie, Georges, 4,210,095, Cl. 118-57.000.

Betts, David A., to Gould Inc. Low tire warning system. 4,210,898, Cl. 340-58.000.

Bhalla, Ranbir S., to Westinghouse Electric Corp. HID Lamp emission material. 4,210,840, Cl. 313-218.000.

Bianchetta, Donald L., to Caterpillar Tractor Co. Three-circuit fluid system having controlled fluid combining. 4,210,061, Cl. 91-6.000.

Bigelow, John H., to Du Pont de Nemours, E. I., and Company. Silver halide emulsion containing tetrathiocino diisothiazoles as antifoggers. 4,210,716, Cl. 430-615.000.

Billings Energy Corporation: *See—*
Campbell, Barrie C.; and Simons, Harold M., 4,210,511, Cl. 204-256.000.
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, to Societe Nationale Elf Aquitaine (Production). Pneumatic compensator for a fluid sampling cell. 4,210,025, Cl. 73-421.00R.
Binsack, Rudolf: *See—*
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.
Birkestrand, Orville J. Machine for pinch rolling, deburring and the like. 4,210,008, Cl. 72-105.000.
Bishop, Craig V., to Rohco, Inc. Alkaline zinc electroplating bath and additive compositions therefor. 4,210,500, Cl. 204-55.00Y.
Bixby, William E., to A. B. Dick Company. Photoconductor of varying light sensitivity from center to edges. 4,210,710, Cl. 430-56.000.
Black & Decker, Inc.: *See—*
Pugh, Timothy G.; and Shifflett, Omer L., Jr., 4,209,875, Cl. 15-344.000.
Blackman, Cornelius P., to Hansen Manufacturing Company, The. Rod antenna with loading coil and quick-connect coupling assembly. 4,210,914, Cl. 343-715.000.
Blanchard, Jean; and Verry, Monique, to Centre d'Etude pour l'Industrie Pharmaceutique. Process for the treatment of patients suffering from drepanocytosis. 4,210,649, Cl. 424-256.000.
Blanton, James R., to Dresser Industries, Inc. Temperature compensating hydraulic jarring tool. 4,210,214, Cl. 175-297.000.
Blore, James H., to Phillips Petroleum Company. Knitting intermittently drawn yarns. 4,209,881, Cl. 28-243.000.
Bob Baker Enterprises, Inc.: *See—*
Tantillo, Robert M.; and Niven, David A., 4,210,538, Cl. 210-333.00A.
Bobkowicz, Emilian. Universal spinning system. 4,209,965, Cl. 57-5.000.
Bocharov, Jury A.: *See—*
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.
Bock, Klaus-Detlef; and Waltersdorfer, Anna, to Hoechst Aktiengesellschaft. Insecticidal and acaricidal compositions. 4,210,642, Cl. 424-200.000.
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Schmidt, Gunther; and Leitold, Matyas, 4,210,648, Cl. 424-256.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.
Boersma, Richard F., to Fiat-Allis Construction Machinery, Inc. Operator's compartment and seat mounting. 4,210,362, Cl. 296-190.000.
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Bohme, Reinhard D.; and Ragan, Robert O., to Champion International Corporation. Overlay sheet and wood laminate. 4,210,692, Cl. 428-106.000.
Bohmer, Friedhelm: *See—*
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, 4,210,011, Cl. 72-234.000.
Bolgiano, Nicholas C.; and Swern, Daniel. Photochemical process for treating nylon fiber yarn or pile fabric. 4,210,691, Cl. 428-96.000.
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Andersson, Roy E. P.; and Bohm, Jan A., 4,210,290, Cl. 241-30.000.
Bollinger, Frederic G.; and D'Amico, John J., to Monsanto Company. N-Substituted oxobenzothiazolines and their use as plant growth regulators. 4,210,439, Cl. 71-90.000.
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Chelminski, Paul; and Chelminski, Stephen V., 4,210,222, Cl. 181-107.000.
Boodley, Nancy K.; and Hanshaw, Frank. Solar collector with multiturn collecting strips. 4,210,130, Cl. 126-449.000.
Booth, John A.; and Ingle, Jess H. Portable baseball pitching target and catching apparatus. 4,210,326, Cl. 273-26.00A.
Boret, Roger; Bronner, Charles; Huin, Roland; and Vidal, Andre, to Intitut Francais du Petrole. Process and apparatus for hydrocarbon conversion. 4,210,519, Cl. 208-49.000.
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., to Sperry Corporation. Digital computer with overlapped operation utilizing conditional control to minimize time losses. 4,210,960, Cl. 364-200.000.
Borgstrom, Alan D., to Amerace Corporation. Electrical connector contacts. 4,210,381, Cl. 339-115.00C.
Borisov, Boris K.: *See—*
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.
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Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
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Walker, Peter S.; and Borzone, Rocco, 4,209,861, Cl. 3-1.911.
Bos, Willem. Valve for batchwise withdrawing liquid from a container. 4,210,263, Cl. 222-449.000.
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Husslein, Julius; and Hertel, Wilhelm, 4,210,124, Cl. 126-390.000.
Boss, Jurg A., to Flowtec AG. Method for the inductive measurement of fluid flow. 4,210,022, Cl. 73-861.170.
Boujet, Jean-Pierre; and Dietz, Jean, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Multiple branch-line wave guide coupler. 4,210,880, Cl. 333-110.000.
Bourque, Edmond A. Grounded flying saucer toys. 4,209,941, Cl. 46-230.000.
Boushey, Homer A. Electromagnetic position indicator/differential transformer. 4,210,891, Cl. 336-135.000.
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Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, 4,210,446, Cl. 75-148.000.
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Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., 4,210,940, Cl. 360-33.000.
Bowerman, John J.; and Wilson, John F., to Frederick Electronics Corp. Pseudo-transparent stop bit generator. 4,210,777, Cl. 375-117.000.
Bowers, Dan M.: *See—*
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Bowers, Donald J., to Davis Refractories, Inc. Carbon bonded refractory brick composition. 4,210,453, Cl. 106-56.000.
Bowles Fluidics Corporation: *See—*
Stouffer, Ronald D.; and Bowles Fluidics Corporation, 4,210,283, Cl. 239-11.000.
Bowman, Jan, to Kaiser Aluminum & Chemical Corporation. Method of casting an integral slide gate and nozzle. 4,210,617, Cl. 264-71.000.
Boyer, Robert C.; and Williams, George J., to Ecolaire Incorporated. Support for heat exchange tubes. 4,210,202, Cl. 165-162.000.
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Braam, Johannes W. T. M.: *See—*
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Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, to Daimler-Benz Aktiengesellschaft. Fastening arrangement of safety belt locks at motor vehicle seats. 4,210,365, Cl. 297-481.000.
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., to Rockwool Aktiebolaget. Method for control of the surface weight of a mineral wool mat. 4,210,432, Cl. 65-4.00R.
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., to Owens-Illinois, Inc. Fluid collection apparatus. 4,210,623, Cl. 422-101.000.
Breslow, Jeffrey D.: *See—*
Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., 4,210,331, Cl. 273-120.00R.
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, to Schloemann-Siemag Aktiengesellschaft. Rolling mill. 4,210,011, Cl. 72-234.000.
Brett, David P.; and Walker, Christopher J. Method and apparatus for cleaning gas. 4,210,427, Cl. 55-96.000.
Bridger, Robert F., to Mobil Oil Corporation. Synthesis of boroxarophenanthrenes. 4,210,599, Cl. 260-462.00C.
Brieger, Emmet F., to Gearhart-Owen Industries, Inc. Formation testers. 4,210,018, Cl. 73-155.000.
Bright, John H.: *See—*
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Brinkman, Willem, to Holec N.V. Electromagnetically actuated pumps. 4,210,116, Cl. 123-504.000.
Brinkman, Willem, to Holec N.V. Device for supplying fuel to a combustion engine and method of manufacturing said device. 4,210,117, Cl. 123-504.000.
Britton, John, to General Electric Company Limited, The. Circuits for operating electric discharge lamps. 4,210,850, Cl. 315-290.000.
Brix, Arthur T.: *See—*
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.
Brockman, Raymond G.; and Nadeau, William C., to Nadeau, William C. Hiccough treatment appliance. 4,210,141, Cl. 128-272.000.
Brodrene Gram A/S: *See—*
Gram, Hans, 4,210,237, Cl. 198-425.000.
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Broitman, Marvin: *See—*
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.
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Brossard, Pierre C.: *See—*
Poitevin, Jean-Pierre R.; and Brossard, Pierre C., 4,210,879, Cl. 332-9.00R.
Brothers, Jack, to United States of America, Army. Sub projectile or flechette launch system. 4,210,082, Cl. 102-8.000.
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Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., 4,210,012, Cl. 72-235.000.

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Brown, Ivan R., to Hardinge Brothers, Inc. Apparatus for turning machines and the like for simultaneous axial and radial profiling of work. 4,210,040, Cl. 82-19.000.
Brown, Jack E., Jr., to Goodyear Tire & Rubber Company, The. Tire with a folded annular reinforcement. 4,210,189, Cl. 152-361.0FP.
Brown, James L.; Lin, Wayne H. T.; and Woods, James W., to Mallinckrodt, Inc. Container for immunochemical and enzymatical determinations or procedures. 4,210,418, Cl. 23-230.00B.
Brown, Randolph E., Jr.: *See—*
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Brown, Timothy E.: *See—*
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Brown & Williamson Tobacco Corporation: *See—*
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Brubaker, Gaylen R., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,210,551, Cl. 252-102.000.
Brugmann, Dirk A. Labeling tab for hanging folders. 4,209,925, Cl. 40-359.000.
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Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.
Brusselle, Andre. Cable clamp for fastening a cable onto a cable spool. 4,210,295, Cl. 242-125.100.
Brzostek, Melvin W., to Western Electric Company, Inc. Cable connector housing having strain relief system. 4,210,380, Cl. 339-107.000.
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Dyce, John W.; and Buczak, Ronald F., 4,209,893, Cl. 29-522.00R.
Budd Company, The: *See—*
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Buescher, William E.; and Gallaro, Anthony V., to GTE Sylvania Incorporated. Cathode ray tube arc suppressor coating. 4,210,844, Cl. 313-479.000.
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Burkard, Willy; and Wyss, Pierre-Charles, to Hoffmann-La Roche Inc. Morpholino containing benzamides. 4,210,754, Cl. 544-167.000.
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., to McDonnell Douglas Corporation. Bond and method of making the same. 4,210,389, Cl. 350-321.000.
Burnett, James E.; and Kenworthy, E. J. Doyle, to Mead Corporation, The. Magnetically activated plane wave stimulator. 4,210,920, Cl. 346-75.000.
Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyrane compounds. 4,210,591, Cl. 260-326.11S.
Burroughs Corporation: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; Baran, Joseph; and Ingalls, Curtis W., 4,210,346, Cl. 283-8.00B.
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Butterworth, Donald J.; and Ryan, Leo F., to Ecodyne Corporation. Liquid treatment apparatus. 4,210,537, Cl. 210-323.00T.
BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH: *See—*
Sontheimer, Georg, 4,210,368, Cl. 303-3.000.
Byrd, Fred; and Fisher, James A., to Armco Inc. Means for maintaining a non-oxidizing atmosphere at positive pressure within the metallic strip preparation furnace of a metallic coating line during line stops. 4,210,097, Cl. 118-65.000.
C. L. Frost & Son, Inc.: *See—*
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.
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Calspan Corporation: *See—*
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Campbell, Barrie C.; and Simons, Harold M., to Billings Energy Corporation. Electrolyzer apparatus and electrode structure therefor. 4,210,511, Cl. 204-256.000.
Canning, Robert B. Aerodynamic drag-reducing shield for mounting on the front of a cargo carrying compartment of a road vehicle. 4,210,354, Cl. 296-1.00S.
Cantoni, Guilio L.: *See—*
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Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., to Lutron Electronics Co., Inc. Inverter circuit for energizing and dimming gas discharge lamps. 4,210,846, Cl. 315-121.000.
Carl Freudenberg, Firma: *See—*
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Carlingswitch, Inc.: *See—*
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Carmon, Amiram: *See—*
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Carroll, Herbert J.; and Davis, Thomas C., Sr. Hydraulic jack. 4,210,314, Cl. 254-8.00B.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 4,210,941, Cl. 360-48.000.
Casperson, Philip W., to Occidental Petroleum Corporation. Ammoniated phosphoric acid fertilizer production. 4,210,438, Cl. 71-34.000.
Castaneda, Jimeno O., to Consejo Nacional de Ciencia y Tecnologia. Vaginal microscope. 4,210,133, Cl. 128-6.000.
Castleman, Kenneth R., to California Institute of Technology. Automated quantitative muscle biopsy analysis system. 4,210,419, Cl. 23-230.00B.
Castner, Kenneth F.: *See—*
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Castro, Anthony J.; and Stoll, James W., to Akzona Incorporated. Solid antistatic compositions. 4,210,556, Cl. 525-6.000.
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Bianchetta, Donald L., 4,210,061, Cl. 91-6.000.
Livesay, Richard E., 4,210,292, Cl. 241-148.000.
Master, Ralph E., 4,209,985, Cl. 60-337.000.
McGee, Mary Ann C.; and Bahnfleth, William A., 4,210,372, Cl. 308-189.00R.
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Cella, James A., to General Electric Company. Silyl ethers of 1,3-dicarbonyl cyclic compounds. 4,210,596, Cl. 556-436.000.
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Chabonat, Marcel. Propulsive lifting rotors. 4,210,299, Cl. 244-20.000.
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Chandler, Mikel G.; and Chandler, Von. Turnrow plow. 4,210,211, Cl. 172-451.000.
Chandler, Von: *See—*
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Changani, Pushpkumar D.: *See—*
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Chavers, Jane E.: *See—*
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Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.
Sridhar, Srinivasan, 4,210,426, Cl. 55-68.000.
Chen, Peter H.: *See—*
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Chester, Arnold M., to Litton Industrial Products, Inc. Pressure actuated resilient valve seal. 4,210,313, Cl. 251-306.000.
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Simic, Militun, 4,210,458, Cl. 106-287.230.
Chiabrandy, Robert E., to General Electric Company. Balanced Gatling gun. 4,210,058, Cl. 89-12.000.
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., to United States of America, Health, Education and Welfare. 5'-Deoxy-5'-(isobutylthio)-3-deazaadenosine, method of making same and its antiviral effect

on Rous sarcoma virus and Gross murine leukemia virus. 4,210,639, Cl. 424-180.000.
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Rechter, Harold L., 4,210,454, Cl. 106-56.000.
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Child, Frank W., to Child Laboratories Inc. Solenoid operating pump. 4,210,409, Cl. 417-241.000.
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Child, Frank W., 4,210,409, Cl. 417-241.000.
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Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Choksi, Pradip V.; and Johnston, Donald L., to American Hospital Supply Corporation. Syringe pumping system with valves. 4,210,173, Cl. 137-512.300.
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Wong, Thomas S. W.; Wong, Wing Y.; and Chow, Edwin M. W., 4,210,829, Cl. 307-296.00R.
Christopher, Charles A., Jr.; and Clauset, Alvin O., Jr., to Texaco Inc. Method for plugging high permeability zones in subterranean reservoirs. 4,210,204, Cl. 166-270.000.
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Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Churla, Daniel, to Atlas Technologies Inc. Set-screw bushing including integral electrical clamp. 4,210,374, Cl. 339-14.00L.
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Darms, Roland; Wyler, Siegfried; and Greber, Gerd, 4,210,588, Cl. 260-326.00E.
de Montmollin, Rene; and Schutz, Hans-Ulrich, 4,210,582, Cl. 260-154.000.
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, 4,210,757, Cl. 546-52.000.
Karrer, Friedrich, 4,210,612, Cl. 525-204.000.
Kosche, Horst, 4,210,345, Cl. 282-27.500.
Pfeifer, Josef; and Peter, Heinz, 4,210,742, Cl. 528-346.000.
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Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.
Schenker, Karl; and Bernasconi, Raymond, 4,210,655, Cl. 424-267.000.
Schneider, Jurg; and Fattinger, Volker, 4,210,428, Cl. 55-223.000.
Somlo, Tibor; and Hungerbuhler, Anton, 4,210,766, Cl. 568-779.000.
Wirth, Hermann O.; and Wehner, Hermann W., 4,210,595, Cl. 260-429.700.
Ciccarelli, Ronald R. Valve construction for brass wind instrument. 4,210,056, Cl. 84-392.000.
Cihonski, John L., to El Paso Products Company. Production of cyclic hydrocarbons from n-butenes. 4,210,603, Cl. 260-580.000.
Cina, Ronald A.; and Kluge, Albert D., to Roberts Corporation. Automatic method for producing molds using chemically bonded sands. 4,210,194, Cl. 164-16.000.
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Cincotta, Louis; and Foley, James W., to Polaroid Corporation. Synthesis of substituted sulfam(na)phthaleins. 4,210,752, Cl. 544-33.000.
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Citizen Watch Co., Ltd.: *See—*
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Ode, Sadao; and Hatuse, Toshikazu, 4,210,798, Cl. 219-243.000.
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Clark Equipment Company: *See—*
Jesswein, Ronald M., 4,210,405, Cl. 403-158.000.
Clark, Gary T.; and Weaver, Max A., to Eastman Kodak Company. Disperse dyes from 2-bromo, chloro, or cyano-4,6-dinitroaniline and selected alkyl-3-(2'-alkoxy-5-alkanoylaminoanilino)butyrate or alkyl-4-(2'-alkoxy-5'-alkanoylaminoanilino)valerate. 4,210,586, Cl. 260-207.100.
Clark, L. Jack, Jr.; and Clark, David L. Process for manufacturing work gloves. 4,209,857, Cl. 2-169.000.
Clark, Robert N.: *See—*
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., 4,210,623, Cl. 422-101.000.
Clauset, Alvin O., Jr.: *See—*
Christopher, Charles A., Jr.; and Clauset, Alvin O., Jr., 4,210,204, Cl. 166-270.000.
Clayson, Arthur J.; and Fox, Austin L., to Molins Limited. Forming overlapped wrappers. 4,209,956, Cl. 53-396.000.
Clemens, Lawrence M.: *See—*
Scantlin, William M.; and Clemens, Lawrence M., 4,210,703, Cl. 428-413.000.
Clements, Thomas W.: *See—*
Fallon, Merton R.; and Clements, Thomas W., 4,210,172, Cl. 137-504.000.
Cleminshaw, Douglas R.: *See—*
Urion, Kenard E.; and Cleminshaw, Douglas R., 4,210,043, Cl. 83-175.000.
Clevenger, Charles E. Adjustable pump nozzle lever prop. 4,210,181, Cl. 141-392.000.
Clevepak Corporation: *See—*
Molvar, Allen E., 4,210,534, Cl. 210-220.000.
Clifford, John C., to Jersey Nuclear-Avco Isotopes, Inc. Control of pyrophoricity in deposits produced by electron beam evaporation of uranium. 4,210,814, Cl. 250-427.000.
Clifford, Lawrence E.: *See—*
Macaluso, Paul J.; and Clifford, Lawrence E., 4,210,397, Cl. 355-15.000.
Cochran, Veronica: *See—*
Schlesinger, Sheldon I.; and Cochran, Veronica, 4,210,449, Cl. 430-183.000.
Cockerell, Christopher, to Wavepower Limited. Apparatus for extracting energy from movement of water. 4,210,821, Cl. 290-53.000.
Coenen Benelux B. V.: *See—*
Coenen, Michel J., 4,209,858, Cl. 2-412.000.
Coenen, Michel J., to Coenen Benelux B. V. Safety helmet. 4,209,858, Cl. 2-412.000.
Coffey, Lacey C.: *See—*
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., 4,209,891, Cl. 29-466.000.
Cohen, Allen L. Multifocal zone plate. 4,210,391, Cl. 351-161.000.
Cohler, Edmond U.; and Weil, Ernest L. Automatic punch. 4,210,048, Cl. 83-572.000.
Coker, Thomas G.: *See—*
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., 4,210,501, Cl. 204-129.000.
Colasent, Julius R. Insulated supplemental handle housing cast iron utensil handle. 4,209,877, Cl. 16-116.00R.
Cole, Joseph I., to Nassau Recycle Corporation. Wheel-band type continuous casting apparatus. 4,210,198, Cl. 164-433.000.
Collings, Charles A., Jr., to Cummins Engine Company, Inc. Piston ring assembly. 4,210,338, Cl. 277-76.000.
Collins, Marcus H., to Eaton Corporation. Variable width tire building drum. 4,210,482, Cl. 156-415.000.
Combette, Marc; and Ollivier, Jean, to Societe de Prospection et d'Inventions Techniques, S.P.I.T. Rear-loading powder-acetuated tool. 4,210,267, Cl. 227-10.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Boujet, Jean-Pierre; and Dietz, Jean, 4,210,880, Cl. 333-110.000.
Compagnie Internationale pour l'Informatique: *See—*
Mazouet, Joel; Michaux, Jean-Claude; and Mahe, Jean, 4,210,403, Cl. 400-196.100.
Companion Pty. Limited: *See—*
Davis, Frederick C.; and Beer, Richard L., 4,210,118, Cl. 126-25.00R.
Conair Corporation: *See—*
Tomaro, Patrick M., 4,210,797, Cl. 219-225.000.
Confer, Robert G., to Exxon Research & Engineering Co. Emission control method and system. 4,210,503, Cl. 204-158.00R.
Connor, David T., to Warner-Lambert Company. 1,5-Dihydro-1,5-dioxo-N-1H-tetrazol-5-yl-4H-[1]benzopyrano[3,4-b]pyridine-2-carboxamides. 4,210,758, Cl. 546-92.000.
Conoco, Inc.: *See—*
Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., 4,210,764, Cl. 568-618.000.
Consejo Nacional de Ciencia y Tecnologia: *See—*
Castaneda, Jimeno O., 4,210,133, Cl. 128-6.000.
Continental Group, Inc., The: *See—*
Miller, Donald E., 4,210,013, Cl. 72-347.000.
Pan, Peter N. Y., 4,210,255, Cl. 220-209.000.
Continuance Curve Contact Lenses, Inc.: *See—*
Hill, Edward G., 4,210,038, Cl. 82-11.000.
Cook, Sanford L.; and Villa, Joseph N., to Standard Keil Hardware Manufacturing Co. Device for holding a door firmly closed. 4,210,349, Cl. 292-78.000.
Cooke, Ernest, to Astra Lakemedel Aktiebolag. Antithrombotic agents. 4,210,670, Cl. 424-324.000.
Cooke, John P.; and Rohrbach, Walter, to Inventors Products, Inc. Angleworm storage box. 4,210,252, Cl. 220-4.00F.
Coons, David A. Alarm for waking a dozing driver. 4,210,905, Cl. 340-575.000.
Cooper, Brian: *See—*
Haley, Roy; Cooper, Brian; and Changani, Pushpkumar D., 4,210,773, Cl. 174-72.00A.
Coors Container Company: *See—*
Shriver, Frank L., 4,210,684, Cl. 427-286.000.
Copal Company Limited: *See—*
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,210,393, Cl. 354-23.00D.
Coplan, Myron J.; and Sebring, Robert E., to Albany International Corp. Hollow filament separatory module. 4,210,536, Cl. 210-321.00R.
Corben, Leo D., to Polaroid Corporation. Method for forming photosensitive silver halide emulsion. 4,210,450, Cl. 430-567.000.

Corbett, David F.: *See—*
Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., 4,210,662, Cl. 424-274.000.
Cornelissens, Emery G. P., to Akzo N.V. Detergent composition containing an alkali carbonate. 4,210,550, Cl. 252-90.000.
Cornell, Stephen W. Polyolefin containers having improved gas barrier properties. 4,210,573, Cl. 260-42.150.
Corning Glass Works: *See—*
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.
Andrysick, Chester A., 4,210,433, Cl. 65-66.000.
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
Bachman, David L.; and Voorhees, Francis W., 4,210,431, Cl. 65-3.00C.
Kellberg, Howard E.; and Wilder, Arthur H., 4,210,126, Cl. 126-443.000.
Cortes-Garza, Rodrigo. Bathroom fixtures and process of manufacture. 4,209,862, Cl. 4-187.00R.
Couchoud, Paul, to Rhone-Poulenc-Textile. Copolyesters prepared from phosphorus compounds which can be shaped and which have reduced flammability. 4,210,740, Cl. 528-167.000.
Courbot, Pierre, to Societe Anonyme DBA. Clutch assembly. 4,210,233, Cl. 192-89.00B.
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., to Thetford Corporation. Closed loop waste treatment and water recycling toilet system. 4,210,528, Cl. 210-4.000.
Cox, Eugene R.: *See—*
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.
Crankshaw, Michael; and Kucheck, Leo, to Label-Aire Inc. Label spreader applicator. 4,210,484, Cl. 156-542.000.
Crano, John C.: *See—*
DeLue, Norman R.; and Crano, John C., 4,210,631, Cl. 423-292.000.
Criscitelli, Fred J., to United States Postage Corporation. Stamp book vending machine. 4,210,236, Cl. 194-1.00D.
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., to Bell Telephone Laboratories, Incorporated. Linear differential charge splitting input for charge coupled devices. 4,210,825, Cl. 307-221.00D.
Croker, John H., to Gastetner Limited. Planographic printing plate and process for making the same. 4,210,081, Cl. 101-465.000.
Crooks, Graham R., to Imperial Chemical Industries Limited. Reactivation of spent copper containing hydrocyanation catalysts. 4,210,558, Cl. 252-415.000.
Crosby, John; and Terry, Bernard W. H., to Imperial Chemical Industries Limited. Halogenated hydrocarbons, useful as insecticide intermediates, and methods for their preparation. 4,210,611, Cl. 260-653.500.
Crow, John D.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
CTS Corporation: *See—*
Van Benthuysen, John D., 4,210,896, Cl. 338-159.000.
Culbertson, Thomas L., to Ford Motor Company. Electrical connector and housing. 4,210,382, Cl. 339-192.00R.
Cummings, to Texaco Inc. Glycol polyether-acrylic acid-amine reaction product for fuel and mineral oils. 4,210,425, Cl. 44-72.000.
Cummins Engine Company, Inc.: *See—*
Collings, Charles A., Jr., 4,210,338, Cl. 277-76.000.
Cunningham, Robert F. Method of and apparatus for auxiliary control of fluid operated steering apparatus for ships, boats and the like. 4,209,986, Cl. 60-403.000.
Curnutt, Charles. Controlled shock absorber. 4,210,344, Cl. 280-709.000.
Curnutt, Charles R. Anti-lock power brake. 4,210,369, Cl. 303-116.000.
Dahlberg, Arvid S.: *See—*
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., 4,210,432, Cl. 65-4.00R.
Dahms, James B., to PPG Industries, Inc. Method of reducing KCl tailings loss from evaporation. 4,210,421, Cl. 23-303.000.
Dai Nippon Toryo Co., Ltd.: *See—*
Yaguchi, Masachika, 4,210,390, Cl. 350-357.000.
Daicel Ltd.: *See—*
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, 4,210,696, Cl. 428-212.000.
Daimler-Benz Aktiengesellschaft: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Dalibor, Horst, to Hoechst Aktiengesellschaft. Process for the manufacture of soluble copolymers which contain hydroxyl groups and which copolymers can be crosslinked with organic polyisocyanates. 4,210,702, Cl. 428-413.000.
Dameron, H. Clifford, Jr.; Martin, Guy E.; and Brouwer, Nicholaas L., to Aluminum Company of America. Roll compacting of stranded conductor. 4,210,012, Cl. 72-235.000.
D'Amico, John J.: *See—*
Bollinger, Frederic G.; and D'Amico, John J., 4,210,439, Cl. 71-90.000.
Dammann, Ehrhard: *See—*
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.
Danfoss A/S: *See—*
Andresen, Jens N., 4,209,989, Cl. 60-527.000.
Andresen, Jens N., 4,210,030, Cl. 74-43.000.
Daniels, Raymond R.; and Scheid, Norman W. Chemical injection assembly. 4,210,175, Cl. 137-564.500.
Danko, Peter J. Method of making a chair. 4,210,182, Cl. 144-317.000.
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Stabilized red phosphorus. 4,210,630, Cl. 423-265.000.
Dardoufas, Kimon C.: *See—*
Marshall, Robert M.; and Dardoufas, Kimon C., 4,210,700, Cl. 428-395.000.
Darms, Roland; Wyler, Siegfried; and Greber, Gerd, to Ciba-Geigy Corporation. Silicon-modified imidyl-phthalic acid derivatives. 4,210,588, Cl. 260-326.00E.
David, Agoston: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.
Davidson, John J.; and Smith, David A., to Aluminum Company of America. Electrocoating flow control electrode and method. 4,210,507, Cl. 204-181.00R.
Davies, Evan E., to Textron Inc. Fixture for holding zipper sliders. 4,209,897, Cl. 29-768.000.
Davila, Jose E.: *See—*
Gomez, Jim H.; and Davila, Jose E., 4,210,801, Cl. 235-92.0AC.
Davis, Bernard H.; and Welsh, Thomas M., to H. H. Robertson Company. Sheet metal ribbon coating method. 4,210,682, Cl. 427-178.000.
Davis, David E. Circuit test clamp. 4,210,383, Cl. 339-200.00P.
Davis, Frederick C.; and Beer, Richard L., to Companion Pty. Limited. Collapsible barbecues. 4,210,118, Cl. 126-25.00R.
Davis, James E.: *See—*
Burton, James R.; Cantwell, Vernon W.; and Davis, James E., 4,210,544, Cl. 252-47.500.
Davis Refractories, Inc.: *See—*
Bowers, Donald J., 4,210,453, Cl. 106-56.000.
Davis, Thomas C., Sr.: *See—*
Carroll, Herbert J.; and Davis, Thomas C., Sr., 4,210,314, Cl. 254-8.00B.
Davy-Loewy Limited: *See—*
Dobson, John C., 4,210,288, Cl. 239-597.000.
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., to Herds, Inc. Apparatus and a process for treating waste. 4,210,680, Cl. 426-641.000.
Daymarc Corporation: *See—*
Bachman, Walter S.; and Cedrone, Nicholas J., 4,209,959, Cl. 53-475.000.
Dayus, Barry R.: *See—*
Tatum, James R.; and Dayus, Barry R., 4,210,070, Cl. 98-40.00D.
Deere & Company: *See—*
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.
Kittle, Carl E.; and Wittren, Richard A., 4,209,984, Cl. 60-328.000.
Lysenko, George P.; and Smith, Richard J., 4,210,350, Cl. 292-86.000.
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, to BASF Aktiengesellschaft. Azo dyes of the 2,6-di(substituted) amino pyridine series. 4,210,583, Cl. 260-156.000.
De Jonckheere, Raphael, to Societe Anonyme dite: Consortium General Textile. Disposable nappy for a baby. 4,210,143, Cl. 128-287.000.
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, to Forges de Crans. Aluminum alloy for enamelling. 4,210,446, Cl. 75-148.000.
DeLong, Donald C., to Eli Lilly and Company. Antiviral combinations. 4,210,647, Cl. 424-250.000.
DeLue, Norman R.; and Crano, John C., to PPG Industries, Inc. Preparation of boron trichloride. 4,210,631, Cl. 423-292.000.
de Montmollin, Rene; and Schutz, Hans-Ulrich, to Ciba-Geigy Corporation. Water-soluble pyrazolone-imide containing azo dyestuffs. 4,210,582, Cl. 260-154.000.
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., to General Electric Company. Generation of halogens by electrolysis of hydrogen halides in a cell having catalytic electrodes bonded to a solid polymer electrolyte. 4,210,501, Cl. 204-129.000.
Dengler, Siegfried; Loew, Peter; Zickendraht, Christian; and Schwander, Hansrudolf, to Ciba-Geigy Corporation. Novel naphthoylene-perinones disperse dyestuffs. 4,210,757, Cl. 546-52.000.
Dennhoven, Manfred; and Kunze, Claus, to Heimann GmbH. Drive for moveable shield in luggage screening apparatus. 4,210,811, Cl. 250-358.00R.
Dent, Enid-Mary; and Anderson, Arthur A., to Capability Brown Limited. Plant growth package. 4,209,945, Cl. 47-84.000.
Derderian, Harry A.: *See—*
Pronovost, Jacques O.; and Derderian, Harry A., 4,209,980, Cl. 60-517.000.
Desjardins, Claude: *See—*
Ewing, Larry L.; and Desjardins, Claude, 4,210,644, Cl. 424-239.000.
Deuser, Erich, to Kabushikigaisha OMCO. Massaging device. 4,210,135, Cl. 128-57.000.
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for maintaining constant the weight of article stacks. 4,209,960, Cl. 53-502.000.
Devine, John W., Jr.: *See—*
Nestor, Jack; and Devine, John W., Jr., 4,210,145, Cl. 128-305.000.
Nestor, Jack; and Devine, John W., Jr., 4,210,147, Cl. 128-327.000.
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, to Montedison S.p.A. Stabilizers for polymers and polymers stabilized thereby. 4,210,576, Cl. 260-45.8NE.

Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., to Life Instruments Corporation. Method and apparatus for recording and reproducing on film directly viewable TV video signals. 4,210,932, Cl. 358-130.000.

Dicken, John A., Jr.; and Ash, David B., to General Electric Company. Dishwasher having improved spray arm. 4,210,285, Cl. 239-251.000.

Dickhoff, Winfried: *See—*
Klatzer, Stefan; and Dickhoff, Winfried, 4,210,467, Cl. 148-12.00R.

Didier Engineering GmbH: *See—*
Galow, Manfred; and Stefancik, Nikolaus, 4,210,430, Cl. 55-344.000.

Dietz, Jean: *See—*
Boujet, Jean-Pierre; and Dietz, Jean, 4,210,880, Cl. 333-110.000.

Dimitroff, Edward; and Vitkovits, John A., to Southwest Research Institute. Fuel system for and a method of operating a spark-ignited internal combustion engine. 4,210,103, Cl. 123-1.00A.

DiscoVision Associates: *See—*
Bailey, Jack H.; and Ottaway, Gerald H., 4,210,931, Cl. 358-128.500.

Dixon International Limited: *See—*
Redfarn, Cyril A., 4,210,725, Cl. 521-100.000.

Dobler, Peter: *See—*
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

Dobson, John C., to Davy-Loewy Limited. Cooling apparatus. 4,210,288, Cl. 239-597.000.

Dr. Werner Freyberg Chemische Fabrik: *See—*
Praxl, Werner; and Ehret, Reiner, 4,210,683, Cl. 427-221.000.

Dodge, George W. Adhesive pad package. 4,210,245, Cl. 206-440.000.

Dodson, Vance H.; and Roberts, Lawrence R., to W. R. Grace & Co. Portland cement-fly ash-aggregate concretes. 4,210,457, Cl. 106-97.000.

Doguchi, Nobushige: *See—*
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,499, Cl. 204-38.00A.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,695, Cl. 428-209.000.

Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Microporous film battery separator. 4,210,709, Cl. 429-250.000.

Domlim Inc.: *See—*
Rourke, Terence A., 4,210,632, Cl. 423-637.000.

Donaldson, Peter, to Donaldson, Peter; and Moate, David W. Liquid dispensing apparatus with vent valve. 4,210,262, Cl. 222-442.000.

Donatelle, Leo P., to Spanjer Brothers, Inc. Knockdown sign tubular interlocking device. 4,209,927, Cl. 40-607.000.

Donnelley, James R., to Stevenson Industries. Guide mechanism for self-guiding stretch-wrap machine. 4,209,961, Cl. 53-588.000.

Donovan, John S. Gas operated automatic weapon. 4,210,060, Cl. 89-192.000.

Dooley, Martin F.: *See—*
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.

Doppner, Detlef: *See—*
Hoffmann, Klaus; and Doppner, Detlef, 4,210,918, Cl. 346-75.000.

Dore, Jacques P., to Societe Anonyme Automobiles Citroen; and Automobiles Peugeot. Transmission joint with bellows dust-guard. 4,210,002, Cl. 64-32.00F.

Dorman, Linneaus C.; and Mani, Inder, to Dow Chemical Company, The. Method of coupling a protein to an epoxylated latex. 4,210,723, Cl. 435-180.000.

Dormann, Gunter: *See—*
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.

Dosmann, Joseph B. Space heater heat recovery system. 4,210,102, Cl. 122-20.00B.

Doucette, Edward I.; and Shelley, Samuel P., to Doucette Industries, Inc. Heat exchange system. 4,210,199, Cl. 165-70.000.

Doucette Industries, Inc.: *See—*
Doucette, Edward I.; and Shelley, Samuel P., 4,210,199, Cl. 165-70.000.

Dow Chemical Company, The: *See—*
Baggett, Joseph M., 4,210,741, Cl. 528-196.000.
Dorman, Linneaus C.; and Mani, Inder, 4,210,723, Cl. 435-180.000.
Frenier, Wayne W.; and Settineri, William J., 4,210,552, Cl. 252-151.000.
Metcalf, Arthur S.; and Eilers, Louis H., 4,210,455, Cl. 106-90.000.
Snover, John A.; and Caines, R. Scott, 4,210,621, Cl. 264-516.000.
Wilson, Charles A.; and Mixan, Craig E., 4,210,645, Cl. 424-250.000.

Dowdflor Corporation: *See—*
Regan, Ernest E.; and McCann, Thomas J., 4,210,693, Cl. 428-152.000.

Doyel, John S. Hand-held cleaning device with snout-like sweep tunnel. 4,209,870, Cl. 15-97.00R.

Doyel, John S. Hand-operated kitchen appliance for drying vegetables and the like. 4,209,916, Cl. 34-58.000.

Draft Systems, Inc.: *See—*
Fallon, Merton R.; and Clements, Thomas W., 4,210,172, Cl. 137-504.000.

Draghi, James A.: *See—*
Marquis, Edgar E.; and Draghi, James A., 4,210,824, Cl. 307-141.000.

Dragotta, Peter. Medicine dropper cap and bulb assembly apparatus. 4,209,899, Cl. 29-783.000.

Drake, Cyril F., to International Standard Electric Corporation. Anti-corrosion compositions. 4,210,575, Cl. 260-42.520.

Dresser Industries, Inc.: *See—*
Blanton, James R., 4,210,214, Cl. 175-297.000.
Koskie, Earl T., Jr., 4,209,890, Cl. 29-450.000.

Dreyer, Bernard F.; and Paglericcio, Paul F. Hair styling device. 4,210,162, Cl. 132-9.000.

Driscoll, Gary L., to Sun Oil Company of Pennsylvania. Process for making synthetic paper pulp. 4,210,487, Cl. 162-146.000.

Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, to VEB Rationalisierung Halle. Process and apparatus for the acceleration of the ripening of spirits. 4,210,676, Cl. 426-238.000.

Duffield, Albert J.: *See—*
Silva, Joseph W.; and Duffield, Albert J., 4,209,889, Cl. 29-432.000.

Dugois, Jean-Pierre: *See—*
Morel, Paul; and Dugois, Jean-Pierre, 4,210,514, Cl. 204-243.00M.

Dundon, John P.; Klingsberg, Erwin; and Bright, John H., to American Cyanamid Company. Process for preparing aryl[4,4'-bis(di-loweralkyl-amino)benzhydryl]sulfones. 4,210,601, Cl. 260-570.00D.

Dunham-Bush, Inc.: *See—*
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Shaw, David N., 4,209,996, Cl. 62-175.000.
Shaw, David N., 4,209,998, Cl. 62-324.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bigelow, John H., 4,210,716, Cl. 430-615.000.
Hay, James V., 4,210,668, Cl. 424-298.000.
Inskip, Harold K., 4,210,705, Cl. 428-500.000.
Munger, Stanley H.; and Pine, Herbert J., 4,210,712, Cl. 430-275.000.

Dupro AG: *See—*
Maier, Siegfried, 4,209,872, Cl. 15-179.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Pharmacologically active 1,3-bis[1-(2-heteroalkylthio)ethylamino)-2-nitrovinyl-1-amino]propane derivatives. 4,210,652, Cl. 424-263.000.

Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidinosulphonic acid derivatives. 4,210,658, Cl. 424-273.00R.

Dutcher, Daniel P., to Champion International Corporation. Tub-shaped carton and blank for forming same. 4,210,271, Cl. 229-1.50B.

Dutton, Daniel R.: *See—*
Login, Robert B.; and Dutton, Daniel R., 4,210,685, Cl. 427-361.000.

Dworsky, Lawrence N.: *See—*
Enderby, Ralph T.; and Dworsky, Lawrence N., 4,210,886, Cl. 333-24.200.

Dyce, John W.; and Buczak, Ronald F., to Bendix Corporation, The. Solder pack and method of manufacture thereof. 4,209,893, Cl. 29-522.00R.

Dyer, Robert E., to Sangamo Weston, Inc. Solid state power outage recording circuit. 4,210,937, Cl. 360-6.000.

Dynamic Sports concepts, Inc.: *See—*
Kosbab, John V., 4,210,330, Cl. 273-106.50B.

Dzaack, Walter J., to Emerson Electric Co. Electric heating units. 4,210,799, Cl. 219-541.000.

Eastman Kodak Company: *See—*
Clark, Gary T.; and Weaver, Max A., 4,210,586, Cl. 260-207.100.
Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., 4,210,570, Cl. 260-33.6AQ.

Eaton Corporation: *See—*
Collins, Marcus H., 4,210,482, Cl. 156-415.000.

Eckardt, Helmut; and Ehritt, Jurgen, to Schloemann-Siemag Aktiengesellschaft. Apparatus for forming plastic. 4,210,616, Cl. 264-45.100.

ECO Motor Industries Ltd.: *See—*
Pronovost, Jacques O.; and Derderian, Harry A., 4,209,980, Cl. 60-517.000.

Ecodyne Corporation: *See—*
Butterworth, Donald J.; and Ryan, Leo F., 4,210,537, Cl. 210-323.00T.

Ecolaire Incorporated: *See—*
Boyer, Robert C.; and Williams, George J., 4,210,202, Cl. 165-162.000.

Egan, William E., to Goodyear Tire & Rubber Company, The. Pneumatic tire having self-sealing feature. 4,210,187, Cl. 152-347.000.

Eglington, Alfred J.; Howarth, Thomas T.; and Corbett, David F., to Beecham Group Limited. Side chain sulphoxide metabolites. 4,210,662, Cl. 424-274.000.

Ehret, Reiner: *See—*
Praxl, Werner; and Ehret, Reiner, 4,210,683, Cl. 427-221.000.

Ehritt, Jurgen: *See—*
Eckardt, Helmut; and Ehritt, Jurgen, 4,210,616, Cl. 264-45.100.

Eilers, Louis H.: *See—*
Metcalf, Arthur S.; and Eilers, Louis H., 4,210,455, Cl. 106-90.000.

El Paso Products Company: *See—*
Cihonski, John L., 4,210,603, Cl. 260-580.000.

Eldec Corporation: *See—*
Godden, Glenn S., 4,210,216, Cl. 177-134.000.

Elecktrokemiska AB: *See—*
Moree, Hans G. E.; and Grunewald, Helmut, 4,210,461, Cl. 134-11.000.

Electric Power Research Institute, Inc.: *See—*
Hildebrand, B. Percy, 4,210,028, Cl. 73-598.000.
Perry, Elijah R., 4,210,774, Cl. 174-140.00R.

Electro Controls Inc.: *See—*
Labrum, Joseph H., 4,210,955, Cl. 362-321.000.
Elektro-Thermit GmbH.: *See—*
Kempa, Bernd-Joachim, 4,210,300, Cl. 246-430.000.
Elfotec A.G.: *See—*
Forgo, Gabor, 4,210,448, Cl. 430-126.000.
Elfring, Gary C.: *See—*
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.
Eli Lilly and Company: *See—*
DeLong, Donald C., 4,210,647, Cl. 424-250.000.
Paschal, Gloria C.; and Thompson, Gerald L., 4,210,584, Cl. 260-244.400.
Takruri, Harun; and Chavers, Jane E., 4,210,633, Cl. 424-80.000.
Elkawi AG: *See—*
Jaeger, Karl H., 4,210,634, Cl. 424-101.000.
Elliott, Raymond D.: *See—*
Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., 4,210,932, Cl. 358-130.000.
Elmeg-Electro-Mechanik GmbH: *See—*
Zielke, Alfred, 4,210,787, Cl. 200-5.0EA.
Ely, John W.; and Tinsley, John M., to Halliburton Company. High temperature well treating with crosslinked gelled solutions. 4,210,206, Cl. 166-294.000.
Emerson Electric Co.: *See—*
Dzaack, Walter J., 4,210,799, Cl. 219-541.000.
Moore, James L.; and Ewing, Lenoard G., 4,209,902, Cl. 30-276.000.
Emming, Joseph L., to J. I. Case Company. Hydraulic liquid reservoir with internal baffle. 4,210,176, Cl. 137-573.000.
Emmons, William D., to Rohm and Haas Company; and Beckman Instruments, Inc. Ambient or low-temperature curable coatings. 4,210,565, Cl. 260-29.6TA.
Enderby, Ralph T.; and Dworsky, Lawrence N., to Motorola, Inc. Isolator having reactive neutralizing means and predetermined angle between input-output windings. 4,210,886, Cl. 333-24.200.
Endress u. Hauser GmbH u. Co.: *See—*
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,210,915, Cl. 343-786.000.
Engdahl, Arnold B., Jr. Packaging for retortable pouch. 4,210,248, Cl. 206-525.000.
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased (by Unterstenhofer, Ilse, heiress-at-law); Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, to BASF Aktiengesellschaft. Manufacture of thermoplastics fibrids. 4,210,615, Cl. 264-11.000.
English Clays Lovering Pochin & Company, Limited: *See—*
Taylor, John H., 4,210,490, Cl. 162-175.000.
Enomoto, Hiroshi: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Enrique Mitman: *See—*
Mitman, Enrique; and Sadovnik, Isaac, 4,210,041, Cl. 83-32.000.
Erba, Mario. Automatic machine for continuously producing tinned strap caps fitted with opening devices and devices therefor. 4,210,091, Cl. 113-113.00D.
Erikson, Keith W.: *See—*
Erikson, Kenneth W.; and Erikson, Keith W., 4,210,033, Cl. 74-424.80A.
Erikson, Kenneth W.; and Erikson, Keith W., to Kerk Motion Products, Inc. Anti-backlash nut. 4,210,033, Cl. 74-424.80A.
Eriksson, Goran, to Roland, Jack. Hoisting apparatus. 4,210,352, Cl. 294-81.00R.
Ernest, Raymond; and Nestor, Jack, to Ernest, Raymond. Toothbrush with improved interproximal and free gingival margin accessibility. 4,209,871, Cl. 15-167.00R.
Eross, Bela, to Instrumentation Industries, Inc. Positive pressure valves. 4,210,174, Cl. 137-528.000.
Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H.: *See—*
Kienast, Hans, 4,210,291, Cl. 241-110.000.
Escher, William J. D. Multimode solar energy collector and process. 4,210,463, Cl. 136-89.0PC.
Etablissements Carpano & Pons: *See—*
Saligny, Yves, 4,210,375, Cl. 339-14.00L.
Ethyl Corporation: *See—*
Huang, Yun-Yang, 4,210,597, Cl. 260-449.00R.
Stephens, Ruth E., 4,210,574, Cl. 260-42.160.
Etzel, James E.; and Keramida, Vasiliki, to Purdue Research Foundation. Treatment of metal plating wastes with an unexpanded vermiculite cation exchange column. 4,210,530, Cl. 210-38.00B.
Euzen, Jean-Paul; and Scemama, Patrick, to Institut Francais du Petrole; and Societe Anonyme Pipe Line Service. Device for following the variations in the composition of a flowing heterogeneous liquid mixture. 4,210,015, Cl. 73-61.10R.
Evans, Alton, Jr., to Owens-Corning Fiberglas Corporation. Method of and apparatus for making air filters. 4,210,067, Cl. 93-1.00F.
Ewe, Kurt; and Linzenkirchner, Edmund, to Siemens Aktiengesellschaft. Control device with an integrating position drive. 4,210,853, Cl. 318-630.000.
Ewing, Larry L.; and Desjardins, Claude, to Johns Hopkins University, The. Male contraception. 4,210,644, Cl. 424-239.000.
Ewing, Lenoard G.: *See—*
Moore, James L.; and Ewing, Lenoard G., 4,209,902, Cl. 30-276.000.
Exxon Enterprises, Inc.: *See—*
Hurst, Ralph, 4,210,831, Cl. 310-13.000.
Exxon Research & Engineering Co.: *See—*
Baker, Richard H., 4,210,826, Cl. 307-254.000.
Confer, Robert G., 4,210,503, Cl. 204-158.00R.
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., 4,210,568, Cl. 260-32.400.
Wilson, Edward L., Jr.; and Mitchell, Willard N., 4,210,518, Cl. 208-10.000.
F. A. Hughes and Company Limited: *See—*
Odds, David J. H., 4,209,952, Cl. 51-415.000.
Fabisiewicz, Eugene, to Baxter Travenol Laboratories, Inc. Method for bonding a plastic tubing to a metal needle and the needle assembly formed thereby. 4,210,479, Cl. 156-273.000.
Fahrenkrog-Petersen, Dieter: *See—*
Ritter, Peter; and Fahrenkrog-Petersen, Dieter, 4,210,951, Cl. 361-391.000.
Falk, Donald G.; and Armstrong, William J., to Dunham-Bush, Inc.; General Electric Company; and Dunham-Bush, Inc. Household refrigerator with through-the-door ice service. 4,209,999, Cl. 62-344.000.
Fallon, Merton R.; and Clements, Thomas W., to Draft Systems, Inc. Apparatus for dispensing fluid under pressure. 4,210,172, Cl. 137-504.000.
Fansteel Inc.: *See—*
Berry, Robert W., Jr., 4,210,406, Cl. 408-223.000.
Farfor, James D.; and Gall, Huba, to Rocla Concrete Pipes Limited. Reinforcement fibres. 4,210,009, Cl. 72-186.000.
Faris, Sadeg M., to International Business Machines Corporation. Polarity switch incorporating Josephson devices. 4,210,921, Cl. 357-5.000.
Farrington, Gregory C., to General Electric Company. Sealed lithium-type electrochemical cell. 4,210,707, Cl. 429-105.000.
Fattinger, Volker: *See—*
Schneider, Jurg; and Fattinger, Volker, 4,210,428, Cl. 55-223.000.
Faulkner, Lois V.: *See—*
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., 4,210,609, Cl. 568-947.000.
Fauser, Fritz: *See—*
Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, 4,209,940, Cl. 46-145.000.
Fauth, Gunter, to AGFA-Gevaert, A.G. Photographic apparatus. 4,210,392, Cl. 354-21.000.
Fearing, D. David, to Fearing Manufacturing Co., Inc. Marking tag. 4,209,924, Cl. 40-301.000.
Fearing Manufacturing Co., Inc.: *See—*
Fearing, D. David, 4,209,924, Cl. 40-301.000.
Feather, Jack V. Body engaging exercising device. 4,210,323, Cl. 272-137.000.
Feder, Joseph: *See—*
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,719, Cl. 435-41.000.
Fee, Graham M., to True Temper Corporation. Spring type anchors. 4,210,281, Cl. 238-327.00R.
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, to Hellige GmbH. Medical diagnostic device for determining bleeding times and behavior of bleedings from a standardized wound. 4,210,153, Cl. 128-637.000.
Feldkamper, Richard, to Windmoller & Holscher. Vacuum control for sheet applicator machines. 4,210,320, Cl. 271-108.000.
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., to Exxon Research & Engineering Co. Combination of ethylene polymer, normal paraffinic wax and nitrogen containing compound (stabilized, if desired, with one or more compatibility additives) to improve cold flow properties of distillate fuel oils. 4,210,424, Cl. 44-62.000.
Felix, Rolf: *See—*
Fleisch, Herbert A.; and Felix, Rolf, 4,210,643, Cl. 424-204.000.
Felten, Gilbert A., to Goodyear Tire & Rubber Company, The. Method for parting ply stock between side-by-side cords or wires. 4,210,042, Cl. 83-49.000.
Fender, William H., to Solardyne, Inc. Water flow controller device. 4,210,125, Cl. 126-437.000.
Ferdelman, Donald C., to White Consolidated Industries, Inc. Controls for room air conditioner with timer and power saver. 4,209,995, Cl. 62-157.000.
Fernstrom, John D.: *See—*
Wurtman, Richard J.; Wurtman, Judith J.; and Fernstrom, John D., 4,210,637, Cl. 424-180.000.
Ferranti Limited: *See—*
Walters, Frank, 4,210,838, Cl. 313-198.000.
Ferrara, Angelo: *See—*
Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L., 4,210,963, Cl. 364-567.000.
Fiat-Allis Construction Machinery, Inc.: *See—*
Boersma, Richard F., 4,210,362, Cl. 296-190.000.
Filkins, David E.: *See—*
Wallin, Lloyd A.; and Filkins, David E., 4,209,913, Cl. 34-21.000.

Fingerle, Karl; and Lotzwik, Gerd, to Fortuna-Werke Maschinenfabrik GmbH. Band knife splitting machine feed roll arrangement. 4,210,051, Cl. 83-871.000.

Fingermatrix, Inc.: *See*—
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., 4,210,899, Cl. 340-146.30E.

Fischer, Emil, to Albert-Frankenthal AG. Rotary stapling machine. 4,210,268, Cl. 227-81.000.

Fischer, Johanna: *See*—
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.

Fisher, Arnold R., to Libbey-Owens-Ford Company. Scoring mechanism. 4,210,052, Cl. 83-881.000.

Fisher, Arthur W., III: *See*—
Hermsdorf, Horst G.; and Pitts, Clyde T., 4,209,982, Cl. 60-325.000.

Fisher, James A.: *See*—
Byrd, Fred; and Fisher, James A., 4,210,097, Cl. 118-65.000.

Fleer, Ernst O., to Siemens Aktiengesellschaft. Mobile dental unit. 4,209,908, Cl. 433-78.000.

Fleisch, Herbert A.; and Felix, Rolf, to Procter & Gamble Company, The. Phosphonate pharmaceutical composition. 4,210,643, Cl. 424-204.000.

Flett, Douglas S., to Matthey Rustenburg Refiners (Proprietary) Limited. Process for separating cobalt and nickel by solvent extraction. 4,210,625, Cl. 423-139.000.

Flowtec AG: *See*—
Boss, Jurg A., 4,210,022, Cl. 73-861.170.

Fluck, Rene: *See*—
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.

Flumm, Paul T., to Timex Corporation. Means of setting a solid state watch. 4,209,976, Cl. 368-187.000.

Flynn, James A.: *See*—
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., 4,210,785, Cl. 179-100.1PS.

FMC Corporation: *See*—
Brubaker, Gaylen R., 4,210,551, Cl. 252-102.000.

Fogg, Lawrence D., III, to Lockhead Corporation. Laminated composite structural fitting and method of making. 4,210,694, Cl. 428-174.000.

Foley, James W.: *See*—
Cincotta, Louis; and Foley, James W., 4,210,752, Cl. 544-33.000.

Fong, Willie, deceased: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fong, Yukiye, executrix: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fontanelli, Renzo: *See*—
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., to International Business Machines Corporation. High frequency high voltage power supply. 4,210,858, Cl. 323-22.00T.

Ford Motor Company: *See*—
Culbertson, Thomas L., 4,210,382, Cl. 339-192.00R.
McPherson, James C., 4,210,195, Cl. 164-57.000.

Forest, Roger C. Safety stirrup having a swingaway footrest released by toe-actuated deflector plates. 4,209,962, Cl. 54-49.000.

Forges de Crans: *See*—
Deleuze, Michel; Boutin, Francois-Regis; and Marchive, Daniel, 4,210,446, Cl. 75-148.000.

Forgo, Gabor, to Elfotec A.G. Process for electrophotographic image formation and transfer. 4,210,448, Cl. 430-126.000.

Fors, Jan: *See*—
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, 4,210,747, Cl. 536-60.000.

Fortuna-Werke Maschinenfabrik GmbH: *See*—
Fingerle, Karl; and Lotzwik, Gerd, 4,210,051, Cl. 83-871.000.

Foster, Robert E.: *See*—
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.

Fotis, Peter: *See*—
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.

Foundation: The Assn. of Japan General Denistry, The: *See*—
Ando, Shoichi; Inaba, Kiminobu; and Yoshida, Tomoaki, 4,210,812, Cl. 250-416.0TV.

Fournet-Fayas, Christian, to Agence Nationale de Valorisation de la Recherche (ANVAR). Microwave applicator for radiating microwaves to an elongated zone. 4,210,793, Cl. 219-10.55F.

Fowler, Billy C.: *See*—
Rodgers, James L.; and Fowler, Billy C., 4,210,775, Cl. 178-19.000.

Fox, Austin L.: *See*—
Clayson, Arthur J.; and Fox, Austin L., 4,209,956, Cl. 53-396.000.

Fox Valley Corporation: *See*—
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.

Fraser, Donald L., Jr.; and Tompsett, Michael F., to Bell Telephone Laboratories, Incorporated. High-ratio-accuracy capacitor geometries for integrated circuits. 4,210,950, Cl. 361-329.000.

Frechette, Thomas E., to Royal Business Machines, Inc. Ribbon cartridge with integral anti spool rotation device. 4,210,296, Cl. 242-198.000.

Frederick Electronics Corp.: *See*—
Bowerman, John J.; and Wilson, John F., 4,210,777, Cl. 375-117.000.

Frenier, Wayne W.; and Settineri, William J., to Dow Chemical Company, The. Sulfonium compounds as corrosion inhibitors in aqueous acidic cleaning solutions. 4,210,552, Cl. 252-151.000.

Frenz, Norbert W., Jr.: *See*—
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.

Fricano, Phillip J., to Quaker Oats Company, The. Two-walled carton. 4,210,240, Cl. 206-45.310.

Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, to Jenoptik Jena G.m.b.H. Method for measuring the electrophoretic mobility of particles. 4,210,504, Cl. 204-180.00R.

Frielingsdorf, Hans: *See*—
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.

Fritz, Gary R.: *See*—
Howell, Stephen L.; and Fritz, Gary R., 4,210,054, Cl. 84-1.190.

Fromaget, Georges, to Saint-Gobain Industries. Strand transfer. 4,210,293, Cl. 242-18.00A.

Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., to C. L. Frost & Son, Inc. Chain bracket with strengthened chain supports. 4,210,238, Cl. 198-687.000.

Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., to Fox Valley Corporation. Folded sheets of wrapping paper. 4,210,247, Cl. 206-494.000.

Fryman, Richard K.: *See*—
Hodits, Frank W., Jr.; and Fryman, Richard K., 4,209,997, Cl. 62-226.000.

Frymaster Corporation, The: *See*—
Moore, L. Frank; and Price, George M., 4,210,123, Cl. 126-374.000.
Moore, L. Frank; and Price, George M., 4,210,177, Cl. 137-613.000.

Fuelling, William, Jr.; and Heismann, Richard A., to Outboard Marine Corporation. Two-speed forward and reverse self-propel system for walk-behind mowers. 4,209,964, Cl. 56-11.200.

Fugii, Osamu: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Fuji Photo Film Co., Ltd.: *See*—
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,210,711, Cl. 430-253.000.

Fujikura, Takashi: *See*—
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, 4,210,751, Cl. 544-21.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Imanaka, Hiroshi; and Nishida, Minoru, 4,210,635, Cl. 424-114.000.

Fujita, Kazunori, to Nippon Electric Co., Ltd. Distributed control type telephone switching system. 4,210,782, Cl. 179-18.0ES.

Fujita, Kinya. Orthodontic appliance (bracket and lock pin). 4,209,906, Cl. 433-11.000.

Fujita, Masanori: *See*—
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.

Fujita, Masao: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.

Fujita, Takashi: *See*—
Higuchi, Iwao; and Fujita, Takashi, 4,210,792, Cl. 219-10.49R.

Fujita, Yukio: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Fujitsu Limited: *See*—
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Fujiwara, Yasuo: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.

Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material and method of processing thereof. 4,210,715, Cl. 430-439.000.

Fukahori, Kiyoshi, to Precision Monolithics, Inc. High speed switching circuit. 4,210,830, Cl. 307-362.000.

Fukuda, Kenji: *See*—
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.

Fukuichi, Takuro, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece having an alarm display. 4,209,972, Cl. 368-71.000.

Furuhata, Takashi: *See*—
Yumde, Yasufumi; and Furuhata, Takashi, 4,210,927, Cl. 358-12.000.

Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, to Pioneer Electronic Corporation. Tape stop detection mechanism for cassette tape recorders. 4,210,944, Cl. 360-74.200.

G.P. Societa per Azichi: *See*—
Seragnoli, Enzo, 4,209,955, Cl. 53-54.000.

Ga-Vehren Engineering Company: *See*—
Ver Mehren, Hubert R., 4,210,318, Cl. 270-79.000.

Gaiser, Dieter: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, to John P. Kirby, Esq. Multi-layered plastic sheeting having high clarity, strength, and resistance to water vapor transmission. 4,210,686, Cl. 428-35.000.

Galer, Herbert W., to United States Steel Corporation. Pipe-thread protector. 4,210,179, Cl. 138-96.00T.

Galindez (Aldecoa), Luis, to Ingenieria Del Vidrio, S.A.-Ingevisa. Automatic system and process of shaping and tempering glass pieces. 4,210,434, Cl. 65-104.000.

Gall, Huba: *See*—
Farfor, James D.; and Gall, Huba, 4,210,009, Cl. 72-186.000.

Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., to Stauffer Chemical Company. Internally plasticized vinyl chloride copolymer composition. 4,210,739, Cl. 526-325.000.

Gallaro, Anthony V.: *See*—
Buescher, William E.; and Gallaro, Anthony V., 4,210,844, Cl. 313-479.000.

Galow, Manfred; and Stefancik, Nikolaus, to Didier Engineering GmbH. Cyclone separator assembly. 4,210,430, Cl. 55-344.000.

Ganellin, Charon R.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.

Garner, Lloyd L., to Smith International, Inc. Electronic monitoring of rock bit parameters. 4,210,270, Cl. 228-103.000.

Garrett Corporation, The: *See*—
Woodhouse, Geoffrey D.; and Mattson, George B., 4,209,979, Cl. 60-39.040.

Gastetner Limited: *See*—
Croker, John H., 4,210,081, Cl. 101-465.000.

Gatzke, Kenneth G., to Minnesota Mining and Manufacturing Company. Half soap formation for photothermographic emulsions. 4,210,717, Cl. 430-620.000.

Gauthier, R. Raymond. Tubular frame supported, cantilevered chain saw. 4,210,049, Cl. 83-796.000.

Gearhart-Owen Industries, Inc.: *See*—
Brieger, Emmet F., 4,210,018, Cl. 73-155.000.

Gehrke, Gunter; and Hohmann, Walter, to Bayer Aktiengesellschaft. Transfer printing process. 4,210,413, Cl. 8-471.000.

Geiger, Lon R.: *See*—
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.

General Electric Company: *See*—
Baker, Fred E., 4,210,068, Cl. 93-8.00R.
Barker, Henry P., 4,209,912, Cl. 34-10.000.
Cella, James A., 4,210,596, Cl. 556-436.000.
Chiabrandy, Robert E., 4,210,058, Cl. 89-12.000.
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., 4,210,501, Cl. 204-129.000.
Dicken, John A., Jr.; and Ash, David B., 4,210,285, Cl. 239-251.000.
Falk, Donald G.; and Armstrong, William J., 4,209,999, Cl. 62-344.000.
Farrington, Gregory C., 4,210,707, Cl. 429-105.000.
Hanger, William A., 4,210,404, Cl. 400-124.000.
Lawrance, Richard J.; and Russell, John H., 4,210,512, Cl. 204-257.000.
Mark, Victor, 4,210,765, Cl. 568-726.000.
Relles, Howard M.; and Johnson, Donald S., 4,210,731, Cl. 525-469.000.
Riehl, Mark E., 4,210,815, Cl. 250-445.00R.
Schilling, William F.; and Beltran, Adrian M., 4,210,269, Cl. 228-193.000.
Schroeter, Siegfried H.; and Olson, Daniel R., 4,210,699, Cl. 428-331.000.
Strickland, John J.; and Hoover, Thomas H., 4,209,882, Cl. 29-33.520.
Vodicka, Vincent; and Holub, Fred F., 4,210,841, Cl. 313-221.000.

General Electric Company Limited, The: *See*—
Britton, John, 4,210,850, Cl. 315-290.000.

General Industries, Inc.: *See*—
Grenier, Wilfred J., 4,210,309, Cl. 251-35.000.

General Motors Corporation: *See*—
Jones, Milford F., 4,210,234, Cl. 192-106.100.

General Signal Corporation: *See*—
Sutton, Gary W., 4,210,170, Cl. 137-493.400.

General Tire & Rubber Company, The: *See*—
Neubert, Terry C.; and Anderson, Donald W., 4,210,475, Cl. 156-110.00A.

Gerkema, Jan; and Muijderman, Everhardus A., to U.S. Philips Corporation. Rotary-anode X-ray tube. 4,210,371, Cl. 308-9.000.

Gilbert, Richard, to Stanley Tools Limited. Retractable blade knife. 4,209,900, Cl. 30-162.000.

Gillespie, William S.; and Inglis, Hal L., to American Can Company. Tube forming method. 4,210,477, Cl. 156-203.000.

Gillette Company, The: *See*—
Ascoli, Enzo, 4,210,832, Cl. 310-50.000.
Savage, Paul F.; and Pye, Michael R., 4,210,163, Cl. 132-33.00R.

Gillette, Robert H., to Brammall, Inc. Piston ring honing. 4,209,951, Cl. 51-290.000.

Gillings, Barrie R. D., to University of Sydney. Denture retention. 4,209,905, Cl. 433-189.000.

Gillum, Gary C.; and Klipsch, Paul W., to Klipsch and Associates, Inc. Low frequency folded exponential horn loudspeaker apparatus with bifurcated sound path. 4,210,223, Cl. 181-152.000.

Ginsburgh, Irwin; and McCollum, John D., to Standard Oil Company (Indiana). Induction coil method for detecting underground flame fronts. 4,210,867, Cl. 324-323.000.

Ginsburgh, Irwin; and McCollum, John D., to Standard Oil Company (Indiana). Method for detecting an underground flame front using resistance probes. 4,210,868, Cl. 324-323.000.

Girling Limited: *See*—
Mortimer, Ivan, 4,210,370, Cl. 303-118.000.
Rees, John R., 4,210,229, Cl. 188-18.00A.

Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Use of α,α'-dithiobis(β-arylacrylic acid) derivatives to enhance zinc serum and tissue concentrations. 4,210,664, Cl. 424-275.000.

Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., to Merrell Toraude et Compagnie. Use of α,α'-dithiobis(β-arylacrylic acid) derivatives in heavy metal poisoning. 4,210,665, Cl. 424-275.000.

Glasscock, Theodore E., Sr. Shaft puller. 4,209,888, Cl. 29-263.000.

Gliniorz, Lothar: *See*—
Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, 4,210,266, Cl. 226-97.000.

Godard, Pierre, to Saft-Societe des Accumulateurs Fixes et de Traction. Method and device for charging secondary electric batteries by primary sources. 4,210,854, Cl. 320-10.000.

Godden, Glenn S., to Eldec Corporation. Heated platform scale. 4,210,216, Cl. 177-134.000.

Golovin, Vasily Y.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Golstein, Jerome J., to Alpine Roomaire Systems, Inc. Air purifier. 4,210,429, Cl. 55-279.000.

Gomez, Jim H.; and Davila, Jose E., to Transit Systems Technology, Inc. Fare collection system and components thereof. 4,210,801, Cl. 235-92.0AC.

Good, Paul A.: *See*—
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.

Goodyear Tire & Rubber Company, The: *See*—
Brown, Jack E., Jr., 4,210,189, Cl. 152-361.0FP.
Egan, William E., 4,210,187, Cl. 152-347.000.
Felten, Gilbert A., 4,210,042, Cl. 83-49.000.

Gordon, David L.: *See*—
Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., 4,210,157, Cl. 131-8.00R.

Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, to Upat GmbH & Co. Anchoring dowel with cetent lugs. 4,210,057, Cl. 85-83.000.

Gorring, Robert L.; and Smith, Robert L., to Mobil Oil Corporation. Catalytic upgrading of refractory hydrocarbon stocks. 4,210,521, Cl. 208-89.000.

Goswami, Jagadish C.: *See*—
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.

Goto, Tetsuro: *See*—
Sato, Akihiko; and Goto, Tetsuro, 4,210,394, Cl. 354-234.000.

Gould Inc.: *See*—
Betts, David A., 4,210,898, Cl. 340-58.000.
Salzer, Erwin, 4,210,892, Cl. 337-161.000.

Graber, Elmer A.: *See*—
Hobson, Willis S.; and Graber, Elmer A., 4,210,348, Cl. 285-1.000.

Gram, Hans, to Brodrene Gram A/S. System for transferring articles from a continuously moving feeding conveyor to a receiving conveyor. 4,210,237, Cl. 198-425.000.

Grant, Norman H.: *See*—
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.

Graphic Scanning Corp.: *See*—
Vicari, Ronald P.; and Yampol, Barry, 4,210,783, Cl. 179-18.0FC.

Gras, Rainer: *See*—
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, 4,210,687, Cl. 428-35.000.

Gratani, Francesco: *See*—
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.

Graupe, Daniel, to United States of America, Veterans' Affairs. System and method for multifunctional control of upper limb prosthesis via EMg signal identification. 4,209,860, Cl. 3-1.100.

Greatbatch, Wilson: *See*—
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.

Greber, Gerd: *See*—
Darms, Roland; Wyler, Siegfried; and Greber, Gerd, 4,210,588, Cl. 260-326.00E.
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.

Green, Barry P.; and Sciulli, Francis J., to Harris Corporation. Apparatus for determining image areas for printing. 4,210,818, Cl. 250-559.000.

Greer, Sheldon, to PCR, Inc.; and University of Miami. Antiviral composition and method of treating virus diseases. 4,210,638, Cl. 424-180.000.

Gregorian, Roubik, to American Microsystems, Inc. High pass switched capacitor filter section. 4,210,872, Cl. 330-9.000.

Greiner, Harry; and Preuss, Friedrich, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Apparatus for use on printing presses

to insure optimum color density and to assist in making corrective adjustment. 4,210,078, Cl. 101-136.000.

Grenier, Wilfred J., to General Industries, Inc. Flow control mechanism for flush valve. 4,210,309, Cl. 251-35.000.

Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, to Bayer Aktiengesellschaft. Thermoplastic mixtures of polypropylene with ethylene/vinyl acetate and ethylene/propylene copolymers. 4,210,579, Cl. 525-88.000.

Grimes, Donald A., to Bendix Autolite Corporation. Gas sensor with closely wound termination springs. 4,210,510, Cl. 204-195.00S.

Grimes, Jerry. Inspirational inhalation spirometer apparatus. 4,210,155, Cl. 128-727.000.

Grishin, Oleg P.: *See*—
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.

Groenendyke, Betty, sole heir: *See*—
Groenendyke, Goethe M., deceased; and Hoehn, Gustave L., Jr., 4,210,869, Cl. 324-349.000.

Groenendyke, Goethe M., deceased (by Groenendyke, Betty, sole heir); and Hoehn, Gustave L., Jr., to Mobil Oil Corporation. Rotating telluric field measurements. 4,210,869, Cl. 324-349.000.

Grossman, William C. Fluid power device. 4,210,063, Cl. 91-196.000.

Grunewald, Helmut: *See*—
Moree, Hans G. E.; and Grunewald, Helmut, 4,210,461, Cl. 134-11.000.

Grussen, Jean. One piece molded screw-type bottle cap. 4,210,251, Cl. 215-329.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
McDowell, Jeffrey B., 4,210,243, Cl. 206-332.000.

GTE Products Corporation: *See*—
Mitchell, Robert B.; and Swank, Harry R., 4,210,935, Cl. 358-246.000.

GTE Sylvania Incorporated: *See*—
Buescher, William E.; and Gallaro, Anthony V., 4,210,844, Cl. 313-479.000.

Guerton, Jean P.; Waleckx, Jean; and Monville, Jean M., to SKF Compagnie d'Applications Mechaniques. Resilient coupling device for textile twisting apparatus. 4,209,967, Cl. 57-58.720.

Gulf Research and Development Company: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.
Kehl, William L., 4,210,560, Cl. 252-437.000.
Mann, James T., 4,210,541, Cl. 252-32.70E.
Mann, James T., 4,210,542, Cl. 252-32.70E.
Sabourin, Edward T.; and Selwitz, Charles M., 4,210,610, Cl. 260-649.00R.
Swift, Harold E., 4,210,768, Cl. 585-250.000.

Gundlach, Robert W., to Xerox Corporation. Imaging method and apparatus. 4,210,080, Cl. 101-426.000.

Gunther Rathsack Ingenieurtechnik: *See*—
Rathsack, Gunther; and Hendel, Reinhard, 4,209,910, Cl. 33-185.00R.

Gurney, Gerald W.: *See*—
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.

Gustafsson, Berth U., to Projectus Industriprodukter Aktiebolag. Method and device for drying machine parts. 4,209,914, Cl. 34-27.000.

Gustavson, Fredrik, to Atlas Copco Aktiebolag. Electric nutrunner. 4,210,852, Cl. 318-459.000.

Gyugyi, Laszlo: *See*—
Rosa, John; and Gyugyi, Laszlo, 4,210,860, Cl. 323-119.000.

H. Goodman & Sons, Inc.: *See*—
Sidelman, Abraham, 4,210,164, Cl. 132-40.000.

H. H. Robertson Company: *See*—
Davis, Bernard H.; and Welsh, Thomas M., 4,210,682, Cl. 427-178.000.

Haas, Edgar; and Kottsieper, Edward, to Herman Schwabe, Inc. Die cutting machine with magnetic holder for accurate die positioning. 4,210,047, Cl. 83-530.000.

Hacke, Hans J., to Siemens Aktiengesellschaft. Intermediate member for mounting and contacting a semiconductor body. 4,210,926, Cl. 357-70.000.

Hagen, Dieter, to Westron of Canada Limited. Mercury lamp for promoting plant growth. 4,210,839, Cl. 313-218.000.

Haley, George D. Cement bonded agglomerate containing boron. 4,210,619, Cl. 264-140.000.

Haley, Roy; Cooper, Brian; and Changani, Pushpkumar D., to Raychem Limited. Wiring harness. 4,210,773, Cl. 174-72.00A.

Hall, James R., to Hughes Tool Company. Drill string shock absorber with improved pin type torque transmission means. 4,210,316, Cl. 267-125.000.

Hall, John B.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.

Halliburton Company: *See*—
Ely, John W.; and Tinsley, John M., 4,210,206, Cl. 166-294.000.

Hallworth, Gerald W.: *See*—
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., 4,210,140, Cl. 128-266.000.

Halmos, Imre A., to American Cyanamid Company. Process for preparing acetylsulfaguanidine. 4,210,593, Cl. 260-397.70R.

Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Uniform coloration control in an electrochromic display of the segmented type. 4,210,907, Cl. 340-785.000.

Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Complete bleaching of non-selected display electrodes in an electrochromic display drive. 4,210,909, Cl. 340-763.000.

Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, to Union Carbide Corporation. Process for producing polyurethane foam using as a foam stabilizer an organosilicone oil and a hydrocarbon oil. 4,210,726, Cl. 521-110.000.

Hamanaka, Takamichi: *See*—
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.

Hamlet, Buck C.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.

Hanamura, Takeo: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Hancu, Theodore, to Societe d'Exploitation de Brevets J.B. Windscreen-wiper blade. 4,209,874, Cl. 15-250.320.

Handschuh, Gerald J., to Beckman Instruments, Inc. Non-high density lipoprotein precipitant. 4,210,557, Cl. 252-408.000.

Hanger, William A., to General Electric Company. Printhead compensation arrangement for printer. 4,210,404, Cl. 400-124.000.

Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, to BASF Aktiengesellschaft. Dye mixtures for coloring mineral oil products. 4,210,414, Cl. 8-639.000.

Hansen Manufacturing Company, The: *See*—
Blackman, Cornelius P., 4,210,914, Cl. 343-715.000.

Hanshaw, Frank: *See*—
Boodley, Nancy K.; and Hanshaw, Frank, 4,210,130, Cl. 126-449.000.

Hanson, Geoffrey, to Pegler Hattersley Limited. Valve using flexible element. 4,210,312, Cl. 251-258.000.

Hanson, Merlin L.: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,210,960, Cl. 364-200.000.

Hara, Kunio, to Nifco Inc. Thermal cut-off fuse. 4,210,893, Cl. 337-407.000.

Harding Development Company: *See*—
Hawk, Gary D., 4,209,883, Cl. 29-116.00R.

Hardinge Brothers, Inc.: *See*—
Brown, Ivan R., 4,210,040, Cl. 82-19.000.

Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, to Robert Bosch GmbH. Apparatus for regulating the current drawn from an electric battery. 4,210,855, Cl. 320-13.000.

Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, to Voest-Alpine Aktiengesellschaft. Lifting-table-guide arrangement. 4,210,197, Cl. 164-416.000.

Harris Corporation: *See*—
Beasom, James D., 4,210,875, Cl. 330-261.000.
Green, Barry P.; and Sciulli, Francis J., 4,210,818, Cl. 250-559.000.
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.
Shah, Manhar L.; and Hunt, William D., 4,210,883, Cl. 333-195.000.
VanMeter, Kenneth R., 4,210,776, Cl. 375-120.000.

Harrison, David V.; Weaver, Roy; and Wilson, Henry G. E., to Shell Internationale Research Maatschappij B.V. Apparatus for treating internal surfaces of walls of a tank. 4,210,098, Cl. 118-317.000.

Hartmann, Joseph L.: *See*—
Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L., 4,210,963, Cl. 364-567.000.

Hartmann, Ludwig; and Ruzek, Ivo, to Carl Freudenberg, Firma. Spun nonwoven fabric of polyester filaments for use as backing material for a deep-drawable tufted carpet. 4,210,690, Cl. 428-95.000.

Hasegawa, Akira: *See*—
Ushiku, Kenichi; and Hasegawa, Akira, 4,210,789, Cl. 200-61.45R.

Hata, Kosei, to Seikenkai. Preparation of yogurt. 4,210,672, Cl. 426-43.000.

Hatono, Akio: *See*—
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, 4,210,023, Cl. 73-290.00R.

Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic ignition control method and apparatus. 4,210,111, Cl. 123-414.000.

Hatuse, Toshikazu: *See*—
Ode, Sadao; and Hatuse, Toshikazu, 4,210,798, Cl. 219-243.000.

Haukkovaara, Esko: *See*—
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, 4,210,747, Cl. 536-60.000.

Hawera Probst GmbH & Co.: *See*—
Peetz, Wolfgang; and Klaissle, Siefgried, 4,210,215, Cl. 175-394.000.

Hawk, Gary D., to Harding Development Company. Paint applicator roller construction. 4,209,883, Cl. 29-116.00R.

Hay, James V., to Du Pont de Nemours, E. I., and Company. Insecticidal carbamates. 4,210,668, Cl. 424-298.000.

Hayakawa, Shigeru: *See*—
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, 4,210,894, Cl. 338-35.000.
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, 4,210,546, Cl. 252-62.900.

Hayashi, Fumio: *See*—
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.

Hayashi, Hideo; and Sato, Hisatake, to Nippon Oil Company, Ltd. Composite resinous composition. 4,210,733, Cl. 525-529.000.

Hayashida, Takashi: *See*—
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.

Hebert, Harold J. Oyster dredging apparatus. 4,209,920, Cl. 37-55.000.

Heffernan, Patrick M., to Sumari Engineering, Inc. Vacuum valve for introduction of controlled amounts of air into engine systems. 4,210,113, Cl. 123-574.000.

Hegele, Charles D., to Inland Container Corporation. Bottom-unloading bulk container. 4,210,273, Cl. 229-17.00B.

Heilman, Marlin S.; and Langer, Alois A., to Mirowski, Mieczyslaw. Implantable cardioverter with patient communication. 4,210,149, Cl. 128-419.00D.

Heimann GmbH: *See*—
Dennhoven, Manfred; and Kunze, Claus, 4,210,811, Cl. 250-358.00R.

Heismann, Richard A.: *See*—
Fuelling, William, Jr.; and Heismann, Richard A., 4,209,964, Cl. 56-11.200.

Heitmann, Jurgen, to Robert Bosch GmbH. Process and apparatus for digitally clamping pulse code modulated video signals. 4,210,933, Cl. 358-172.000.

Heitmann, Jurgen; and Wilhelm, Rudolf, to Robert Bosch GmbH. Method and system for speed-modified reproduction of video signals stored on video recording tape. 4,210,938, Cl. 360-10.000.

Helene Curtis Industries, Inc.: *See*—
Wagman, Julius, 4,210,161, Cl. 132-7.000.

Hellige GmbH: *See*—
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, 4,210,153, Cl. 128-637.000.

Hemingway, Joseph M. Shearguard. 4,209,901, Cl. 30-233.000.

Hendel, Reinhard: *See*—
Rathsack, Gunther; and Hendel, Reinhard, 4,209,910, Cl. 33-185.00R.

Henkel Corporation: *See*—
Virnig, Michael J., 4,210,759, Cl. 546-312.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Henkin, Melvyn L. Altitude conditioning method and apparatus. 4,210,137, Cl. 128-200.240.

Henning, Hans: *See*—
Junemann, Dietrich; and Henning, Hans, 4,210,356, Cl. 296-84.00A.

Henrioulle, Paul: *See*—
Hermans, Jean P.; and Henrioulle, Paul, 4,210,738, Cl. 526-152.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,729, Cl. 525-247.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,735, Cl. 526-119.000.

Henry, Martine: *See*—
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.

Henry, Richard D. Approach system with simulated display of runway lights and glide slope indicator. 4,210,930, Cl. 358-103.000.

Herds, Inc.: *See*—
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.

Herion-Werke AG: *See*—
Koppe, Werner; and Prummer, Rolf, 4,210,167, Cl. 137-375.000.

Herman, Daniel F., to NL Industries, Inc. Surfactants and their use as coupling agents in thermosetting polymers. 4,210,571, Cl. 260-40.00R.

Herman, Daniel F.; and Naughton, Francis C., to NL Industries, Inc. Coupling agents for thermosetting composites. 4,210,572, Cl. 260-40.00R.

Herman Schwabe, Inc.: *See*—
Haas, Edgar; and Kottsieper, Edward, 4,210,047, Cl. 83-530.000.

Hermans, Jean P.; and Henrioulle, Paul, to Solvay & Cie. Catalytic complexes. 4,210,738, Cl. 526-152.000.

Hermans, Jean-Pierre; and Henrioulle, Paul, to Solvay & Cie. Preactivated catalytic complex spogospheres. 4,210,729, Cl. 525-247.000.

Hermans, Jean-Pierre; and Henrioulle, Paul, to Solvay & Cie. Process for the polymerization of α-olefins. 4,210,735, Cl. 526-119.000.

Hermelin, Lars G. Method of watering. 4,210,282, Cl. 239-11.000.

Hermsdorf, Horst G.; and Pitts, Clyde T., to Fisher, Arthur W., III. Low temperature fluid energy conversion system. 4,209,982, Cl. 60-325.000.

Hertel, Wilhelm: *See*—
Husslein, Julius; and Hertel, Wilhelm, 4,210,124, Cl. 126-390.000.

Herzer, Heinz: *See*—
Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, 4,210,486, Cl. 156-601.000.

Hessels, Eleutheer A., to Manta, Naamioze Vennootschap. Devices for fitting and removing tires. 4,210,190, Cl. 157-1.240.

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Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
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Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.
Obayashi, Hidehito; and Okamoto, Hiroshi, 4,210,509, Cl. 204-195.00S.
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,210,861, Cl. 324-308.000.
Ushiku, Kenichi; and Hasegawa, Akira, 4,210,789, Cl. 200-61.45R.
Watanabe, Atsumi, 4,210,956, Cl. 363-51.000.
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Bock, Klaus-Detlef; and Waltersdorfer, Anna, 4,210,642, Cl. 424-200.000.
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Muller, Heinz; and Becker, Adolf, 4,210,604, Cl. 260-583.00R.

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Hoffmann, Arthur K.: *See*—
Raghu, Sivaraman; and Hoffmann, Arthur K., 4,210,760, Cl. 548-320.000.

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Holce, Thomas J. Magnetically operated proximity switch. 4,210,888, Cl. 335-207.000.
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Holcombe, Thomas C., to Union Carbide Corporation. Total isomerization process. 4,210,771, Cl. 585-701.000.
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Holmes, Gordon W., to Professional Packaging Limited. Reclosable bag closure system. 4,210,249, Cl. 206-632.000.
Holub, Fred F.: *See—*
Vodicka, Vincent; and Holub, Fred F., 4,210,841, Cl. 313-221.000.
Honda Motor Co., Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.
Honeywell Inc.: *See—*
Kabat, John L.; and Nelson, Marvin D., 4,210,823, Cl. 307-117.000.
Lane, Charles E., III, 4,210,917, Cl. 346-34.000.
Mueller, Dale A.; and Serber, Stephen L., 4,209,994, Cl. 62-155.000.
Shavit, Gideon, 4,210,900, Cl. 340-149.00R.
Spethmann, Donald H., 4,210,957, Cl. 364-105.000.
Hooker Chemicals & Plastics Corp.: *See—*
Annis, Myron C., 4,210,732, Cl. 525-501.000.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,210,516, Cl. 204-284.000.
Hooper, Bernard. Stepped piston two-stroke engines. 4,210,108, Cl. 123-65.00S.
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Strickland, John J.; and Hoover, Thomas H., 4,209,882, Cl. 29-33.520.
Hopkins, Gregory T.; and Wagner, Paul E., to Mitre Corporation, The. Multiple access digital communications system. 4,210,780, Cl. 370-80.000.
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Horiba, Ltd.: *See—*
Miyatake, Kimio, 4,210,808, Cl. 250-343.000.
Horn and Gladden Lint Cleaner Company, Inc.: *See—*
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., 4,210,075, Cl. 100-35.000.
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Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, to Kao Soap Co., Ltd. Process for the preparation of aliphatic amines. 4,210,605, Cl. 260-585.00B.
Hosomizu, Hiroshi: *See—*
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Hosoya, Takasi: *See—*
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Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., 4,210,746, Cl. 536-27.000.
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Howe, Robert K., to Monsanto Company. 2[5-(3-Trifluoromethylphenyl)-1,3,4-oxadiazol-2-yl] benzoates. 4,210,762, Cl. 548-145.000.
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Howmedica, Inc.: *See—*
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Huang, Yun-Yang, to Ethyl Corporation. Preparation of oxygenates from carbon monoxide and hydrogen. 4,210,597, Cl. 260-449.00R.
Huber, William B.; Bower, Ian L.; Flynn, James A.; and Elfring, Gary C., to Bell & Howell Company. Tape replay system. 4,210,785, Cl. 179-100.1PS.
Huber, William B.: *See—*
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Huffman, Dale L., to Auburn Research Foundation. Process for production of a restructured fresh meat product. 4,210,677, Cl. 426-272.000.
Hughes, Donald W. K.; and Myers, Ronald W., to AMP Incorporated. Electrical connector receptacle. 4,210,376, Cl. 339-17.0LC.
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Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.
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Hunt, Bill; and Merriman, Dean R., to Huntron Instruments, Inc. Extendible probe for use with test instruments. 4,210,863, Cl. 324-72.500.
Hunt, James P.: *See—*
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Hunt, William D.: *See—*
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Hurst, Ralph, to Exxon Enterprises, Inc. Involute lamination armature for a linear reciprocating motor. 4,210,831, Cl. 310-13.000.
Husslein, Julius; and Hertel, Wilhelm, to Bosch-Siemens Hausgerate GmbH. Dish for holding food to be heated in a microwave cooking chamber. 4,210,124, Cl. 126-390.000.
Hutchins, Ned M.; and Ridley, Richard D., to Occidental Oil Shale, Inc. Method of detonating explosives for fragmenting oil shale formation toward a vertical free face. 4,210,366, Cl. 299-2.000.
Hutchins, Roger, to Huntec (70) Limited. Heave compensation system. 4,210,897, Cl. 367-106.000.
Hyde, David R.: *See—*
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Hydro-Plan Engineering Ltd.: *See—*
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Hydrocarbon Research, Inc.: *See—*
Weber, Carl L., 4,209,911, Cl. 34-9.000.
Hynes, Frank R., to Xerox Corporation. Copy set counter duplex tray. 4,210,319, Cl. 271-3.100.
Ichioka, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Elevator control apparatus. 4,210,226, Cl. 187-29.00R.
Ih, Charles C., to University of Delaware. Method and apparatus for signal transmission via an optical fiber. 4,210,803, Cl. 455-610.000.
Iimure, Tamio: *See—*
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Ikeda, Tomoaki: *See—*
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Imler, Vaughn R., to PPG Industries, Inc. Method of impressing an accent line in bent glass sheets with a heated tube. 4,210,436, Cl. 65-106.000.
Imperial Chemical Industries Limited: *See—*
Berrie, John S.; and Woolley, Graham E., 4,210,626, Cl. 423-166.000.
Crooks, Graham R., 4,210,558, Cl. 252-415.000.

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Pinto, Alwyn, 4,210,495, Cl. 203-22.000.
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Galindez (Aldecoa), Luis, 4,210,434, Cl. 65-104.000.
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Ingram, John D., to Schlumberger Technology Corp. Selectively combining segments of at least four acoustic well logging waveforms to automatically measure an acoustic wave parameter. 4,210,966, Cl. 367-27.000.
Ingram, John D., to Schlumberger Technology Corp. Method and apparatus for determining acoustic wave parameters in well logging. 4,210,967, Cl. 367-34.000.
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Inland Steel Company: *See*—
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.
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Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.
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Broers, Alec N., 4,210,806, Cl. 250-311.000.
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Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.
Ho, Chung W., 4,210,885, Cl. 333-238.000.
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International Flavors & Fragrances Inc.: *See*—
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International Standard Electric Corporation: *See*—
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Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, to Copal Company Limited. Device for automatically controlling diaphragm aperture. 4,210,393, Cl. 354-23.00D.
Ishikawa, Masakazu: *See*—
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.
Ishiwatari, Hiromasa; and Yamada, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Temperature measurement apparatus. 4,210,024, Cl. 73-362.500.
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Iwanami, Masaru: *See*—
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Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, to Sony Corporation; Fujitsu Limited; and Iwasaki, Shun-Ichi. Magnetic recording medium. 4,210,946, Cl. 360-131.000.
J. I. Case Company: *See*—
Emming, Joseph L., 4,210,176, Cl. 137-573.000.
J. T. Baker Chemical Company: *See*—
Seidenberger, James W., 4,210,460, Cl. 134-7.000.
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Obermair, Gilbert K. J., 4,210,337, Cl. 273-264.000.
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Jaeger, Karl H., to Elkawi AG. Growth promoting fish food composition. 4,210,634, Cl. 424-101.000.
Jagenberg Werke Aktiengesellschaft: *See*—
Osburg, Dieter, 4,210,045, Cl. 83-497.000.
Jahn, Walter: *See*—
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Jain, Atul. System for relative motion detection between wave transmitter-receiver and irregular reflecting surface. 4,210,399, Cl. 356-28.500.
James, Donald N., to Staodynamics, Inc. Miniaturized transcutaneous nerve stimulating device. 4,210,150, Cl. 128-421.000.
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., to Allen & Hanburys Limited. Device for dispensing medicaments. 4,210,140, Cl. 128-266.000.
Janome Sewing Machine Co. Ltd.: *See*—
Takenoya, Hideaki; and Makabe, Hachiro, 4,210,088, Cl. 112-158.00E.
Jansen, Johannes, to Schloemann-Siemag Aktiengesellschaft. Strip reel. 4,210,294, Cl. 242-72.100.
Janssen, Marcel A. C., to Janssen Pharmaceutica N.V. Antimicrobial compositions containing 1-(aryloxyphenyl)piperazines. 4,210,646, Cl. 424-250.000.
Janssen Pharmaceutica N.V.: *See*—
Janssen, Marcel A. C., 4,210,646, Cl. 424-250.000.
Jefferies, Ralph G.: *See*—
Langworthy, Colin G.; and Jefferies, Ralph G., 4,209,988, Cl. 60-431.000.
Jennings, Stephen J.: *See*—
Wittig, J. Michael; and Jennings, Stephen J., 4,210,819, Cl. 290-52.000.
Jenoptik Jena G.m.b.H.: *See*—
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.
Jensen, Hans-Ludwig: *See*—
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.
Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Clifford, John C., 4,210,814, Cl. 250-427.000.
Jess, Thurman S.; and Zissimopoulos, Nicholas, to Baxter Travenol Laboratories, Inc. Metering apparatus for a fluid infusion system with flow control station. 4,210,138, Cl. 128-214.00E.

Jesswein, Ronald M., to Clark Equipment Company. Pivot joint. 4,210,405, Cl. 403-158.000.

Johansson, Sigge; and Bergstrom, Rolf, to Bulten-Kanthal AB. Method of bending a link blank into a chain link and a bending machine for carrying out the method. 4,209,978, Cl. 59-27.000.

John P. Kirby, Esq.: *See*—
Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, 4,210,686, Cl. 428-35.000.

Johns Hopkins University, The: *See*—
Ewing, Larry L.; and Desjardins, Claude, 4,210,644, Cl. 424-239.000.

Johnson, Donald S.: *See*—
Relles, Howard M.; and Johnson, Donald S., 4,210,731, Cl. 525-469.000.

Johnson, Ian L., to Abaline Limited. Apparatus for supporting articles during exposure to a gaseous or vaporous medium. 4,209,917, Cl. 34-149.000.

Johnson, Lawrence N. Boat support roller. 4,210,235, Cl. 193-37.000.

Johnson, Roy A., to Upjohn Company, The. Enlarged-hetero-ring prosta-cyclin analogs. 4,210,748, Cl. 542-426.000.

Johnston, Donald L.: *See*—
Choksi, Pradip V.; and Johnston, Donald L., 4,210,173, Cl. 137-512.300.

Jones, Milford F., to General Motors Corporation. Torsional vibration damper. 4,210,234, Cl. 192-106.100.

Joyner, Frederick B.: *See*—
Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., 4,210,570, Cl. 260-33.6AQ.

Juhasz, Josef: *See*—
Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, 4,210,855, Cl. 320-13.000.

Junemann, Dietrich; and Henning, Hans, to A Raymond. Clamp for fastening trim about a windshield. 4,210,356, Cl. 296-84.00A.

Jurin, Vladislav F.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.

Jyoban Jyuki Kensetsu Kabushiki Kaisha: *See*—
Ueki, Tetsuro; Ogino, Hajime; and Yaguchi, Shigeru, 4,209,926, Cl. 40-437.000.

Kabat, John L.; and Nelson, Marvin D., to Honeywell Inc. Condition control system with special set point means. 4,210,823, Cl. 307-117.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Fukuichi, Takuro, 4,209,972, Cl. 368-71.000.
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,209,971, Cl. 368-76.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Tsukada, Naonobu; and Nishimura, Katsuyoshi, 4,209,907, Cl. 433-33.000.

Kabushiki Kaisha Neriki: *See*—
Yonezawa, Keitaro, 4,210,168, Cl. 137-454.500.

Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,210,688, Cl. 428-41.000.

Kabushiki Kaisha Seikosha: *See*—
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Maezawa, Shuzi, 4,209,973, Cl. 368-84.000.

Kabushikigaisha OMCO: *See*—
Deuser, Erich, 4,210,135, Cl. 128-57.000.
Okazaki, Yasukichi; and Okazaki, Tatsuo, 4,210,134, Cl. 128-24.100.

Kagan, Veniamin G.: *See*—
Palekhin, Vladimir A.; Neiman, Alexandr A.; and Kagan, Veniamin G., 4,210,902, Cl. 340-310.00A.

Kaiser Aluminum & Chemical Corporation: *See*—
Bowman, Jan, 4,210,617, Cl. 264-71.000.

Kalb, Kathryn R.: *See*—
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.

Kallio-Konno, Kari, to Vaisala Oy. Signal transmitting system. 4,210,870, Cl. 455-95.000.

Kamath, Venkatesh: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.

Kamioka, Hajime: *See*—
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Kanazawa, Kenichi; and Tanaka, Yukio, to Sony Corporation. Control circuit for generating a step-type control signal and a continuously varying control signal whose amplitude characteristic repeats at the step transition. 4,210,827, Cl. 307-264.000.

Kandler, Joachim: *See*—
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.

Kaneko, Shigeo: *See*—
Doi, Yoshinao; Fugii, Osamu; Kaneko, Shigeo; and Hanamura, Takeo, 4,210,709, Cl. 429-250.000.

Kaneko, Yutaka: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Kanyo, Erzsebet: *See*—
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.

Kao Soap Co., Ltd.: *See*—
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, 4,210,605, Cl. 260-585.00B.

Karrer, Friedrich, to Ciba-Geigy Corporation. Novel polymeric N-heterocyclic compounds. 4,210,612, Cl. 525-204.000.

Karyaev, Vladimir P.: *See*—
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Kasai, Akio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.

Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, to Kobe Steel, Ltd. Niobium-containing weldable structural steel having good weldability. 4,210,445, Cl. 75-124.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Data-recording device. 4,210,941, Cl. 360-48.000.

Kasper, Robin: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.

Kato, Hiroshi: *See*—
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.

Katsube, Junki: *See*—
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, 4,210,669, Cl. 424-305.000.

Kawada, Hirohito: *See*—
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Kawakubo, Yukio: *See*—
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, 4,210,790, Cl. 200-144.00B.

Kawamura, Norio: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.

Kawasaki, Mikio: *See*—
Fujiwhara, Mitsuto; Matsuo, Syunji; Masukawa, Toyoaki; Kaneko, Yutaka; and Kawasaki, Mikio, 4,210,715, Cl. 430-439.000.

Kawase, Toru: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.

Kawashima, Machio: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.

Kay, Francis X. Fluid control valves. 4,210,310, Cl. 251-61.100.

Keen, Ralph S., to Texas Instruments Incorporated. Fusible-link semiconductor memory. 4,209,894, Cl. 29-577.00R.

Kehl, William L., to Gulf Research and Development Company. Catalytic supports with controlled pore properties. 4,210,560, Cl. 252-437.000.

Kellberg, Howard E.; and Wilder, Arthur H., to Corning Glass Works. Solar energy collector. 4,210,126, Cl. 126-443.000.

Keller, John W., Jr., to Stimtech, Inc. Electronic pain control with scanned output parameters. 4,210,151, Cl. 128-421.000.

Kelly, Peter P.: *See*—
Lewis, Jennings B., III; and Kelly, Peter P., 4,210,442, Cl. 75-60.000.

Kemira Oy: *See*—
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, 4,210,747, Cl. 536-60.000.

Kempa, Bernd-Joachim, to Elektro-Thermit GmbH. Point switch. 4,210,300, Cl. 246-430.000.

Kendall Company, The: *See*—
Perlin, Alfred R., 4,210,131, Cl. 128-1.00R.
Perlin, Alfred R., 4,210,132, Cl. 128-1.00R.

Kennedy, Joseph P.; and Castner, Kenneth F. Synthesis of substituted cyclopentadienes and cyclopentadiene-functionalized polymers. 4,210,737, Cl. 526-185.000.

Kent, Bryan P., to Variani Associates, Inc. Apparatus for making an inductive delay line component. 4,210,483, Cl. 156-443.000.

Kenworthy, E. J. Doyle: *See*—
Burnett, James E.; and Kenworthy, E. J. Doyle, 4,210,920, Cl. 346-75.000.

Keramida, Vasiliki: *See*—
Etzel, James E.; and Keramida, Vasiliki, 4,210,530, Cl. 210-38.00B.

Kerk Motion Products, Inc.: *See*—
Erikson, Kenneth W.; and Erikson, Keith W., 4,210,033, Cl. 74-424.80A.

Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., to National Research Development Corporation. Nucleotide inhibitor of protein synthesis. 4,210,746, Cl. 536-27.000.

Kershner, Stuart D.; and Smith, Ken P., to Olin Corporation. Pre-fixing hanger for insulating side board. 4,210,307, Cl. 249-202.000.

Keuleman, Alexander H. F.; and Hyde, David R., to U.S. Philips Corporation. Control arrangements for clothes driers and clothes driers including such control arrangements. 4,209,915, Cl. 34-48.000.

Keydell, Willi: *See*—
Meyer, Manfred; Keydell, Willi; Mollring, Friederich K.; and Weber, Klaus, 4,210,384, Cl. 350-19.000.

Khodosov, Nikolai A.: *See*—
Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A., 4,210,276, Cl. 233-31.000.

Kiellarson, Folke: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.
Kienast, Hans, to Erste Osterreichische Zahnraderfabrick Rudolf Kienast Gesellschaft m.b.H. Roller mill. 4,210,291, Cl. 241-110.000.
Kienberger, Karl-Heinz; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Microwave antenna with exponentially expanding horn structure. 4,210,915, Cl. 343-786.000.
Kildahl, Nicholas K.: *See*—
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.
Kimball International, Inc.: *See*—
Howell, Stephen L.; and Fritz, Gary R., 4,210,054, Cl. 84-1.190.
Kimura, Hiroshi: *See*—
Hoshino, Fumiro; Kimura, Hiroshi; and Matsutani, Kazuhito, 4,210,605, Cl. 260-585.00B.
Kimura, Takeji, to Matsushita Electric Industrial Co., Ltd. Electronic musical instrument. 4,210,053, Cl. 84-1.010.
Kincaid, Duane P. Sheet metal fireplace stove with improved draft. 4,210,119, Cl. 126-61.000.
Kinsman, Calvin T. Portable foot rest. 4,210,364, Cl. 297-439.000.
Kirikae, Ichiro; and Akiyama, Taichiro, to Akiyama, Taichiro. Model of living body. 4,209,919, Cl. 35-17.000.
Kishita, Kenichirou: *See*—
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.
Kitaguchi, Koji: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Alarm clock. 4,209,969, Cl. 368-250.000.
Kitai, Kiyoshi; and Ishida, Hiroaki, to Seiko Koki Kabushiki Kaisha. Electronic programmed shutter. 4,210,395, Cl. 354-234.000.
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Process for forming an image. 4,210,711, Cl. 430-253.000.
Kitsugi, Kentaro, to Tokyo Automatic Control Kabushiki Kaisha. Pressure regulating equipment for air cushion. 4,210,165, Cl. 137-102.000.
Kittle, Carl E.; and Wittren, Richard A., to Deere & Company. Hydraulic system with unloading valve assembly. 4,209,984, Cl. 60-328.000.
Kiwala, Jacob: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., 4,210,158, Cl. 131-10.00R.
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McKay, James G., 4,210,476, Cl. 156-112.000.
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Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Klaissle, Siefgried: *See*—
Peetz, Wolfgang; and Klaissle, Siefgried, 4,210,215, Cl. 175-394.000.
Klatzer, Stefan; and Dickhoff, Winfried, to Benteler Werke Aktiengesellschaft. Method of making a reinforcement for vehicle doors. 4,210,467, Cl. 148-12.00R.
Kleimola, Frank W., to Nucledyne Engineering Corp. Passive containment system. 4,210,614, Cl. 261-124.000.
Klein, Darrel J. Combine grain drying apparatus. 4,209,918, Cl. 34-182.000.
Klein, Johann, to Bayer Aktiengesellschaft. Sleeve with armband. 4,210,154, Cl. 128-685.000.
Klein, Robert R.: *See*—
Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., 4,210,568, Cl. 260-32.400.
Klein, Wilhelm: *See*—
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Kleine, Charles A.; and Middleton, Verne L., to Olin Corporation. Heat exchanger panel having reference indicia and improved flow distribution. 4,210,127, Cl. 126-444.000.
Klingsberg, Erwin: *See*—
Dundon, John P.; Klingsberg, Erwin; and Bright, John H., 4,210,601, Cl. 260-570.00D.
Klipsch and Associates, Inc.: *See*—
Gillum, Gary C.; and Klipsch, Paul W., 4,210,223, Cl. 181-152.000.
Klipsch, Paul W.: *See*—
Gillum, Gary C.; and Klipsch, Paul W., 4,210,223, Cl. 181-152.000.
Kluge, Albert D.: *See*—
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Knerr, Robert P., Jr.: *See*—
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.
Kobashi, Mamoru: *See*—
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Kobayashi, Sumio: *See*—
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Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, to Tokyo Shibaura Electric Co., Ltd. Semiconductor radiation detector. 4,210,805, Cl. 250-370.000.
Kobe Steel, Ltd.: *See*—
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Kobinger, Walter: *See*—
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Kobylinski, Thaddeus P.: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.
Kochauf, Josef. Flat iron foil. 4,209,921, Cl. 38-97.000.
Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., to Brown & Williamson Tobacco Corporation. Smokable tobacco products. 4,210,157, Cl. 131-8.00R.
Koizumi, Akio, to Sony Corporation. Protective circuit for a switching regulator. 4,210,947, Cl. 361-18.000.
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, to Nippon Oil Company, Ltd. Process for fermentatively producing vitamin B_{12}. 4,210,720, Cl. 435-42.000.
Kojima, Isao: *See*—
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Kojima, Tadao: *See*—
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, 4,210,751, Cl. 544-21.000.
Kollonitsch, Janos: *See*—
Marburg, Stephen; and Kollonitsch, Janos, 4,210,750, Cl. 544-21.000.
Kolt, Stanley, to Suroff, Leonard W., a part interest. Automatic roof ventilator. 4,210,277, Cl. 236-49.000.
Komatsu, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing semiconductor devices. 4,210,689, Cl. 427-88.000.
Komatu, Shigesabroh: *See*—
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.
Kondo, Masanao, to Akechi Taikarenga Kabushiki Kaisha. Immersion nozzle for continuous casting of molten steel. 4,210,264, Cl. 222-591.000.
Kondo, Shiro, to Olympus Optical Co., Ltd. Radio tuner for coupling with cassette tape recorder. 4,210,094, Cl. 116-255.000.
Kondo, Sigeru: *See*—
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, 4,210,498, Cl. 204-35.00N.
Konishiroku Photo Industry Co., Ltd.: *See*—
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Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F. Hydraulic screw press drive. 4,209,987, Cl. 60-413.000.
Koontz, Bryce L. Tool for inserting combination insulation stop and ventilation baffle articles in roof structures. 4,210,353, Cl. 294-19.00R.
Koppe, Herbert: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.
Koppe, Werner; and Prummer, Rolf, to Herion-Werke AG. Emission-free valve. 4,210,167, Cl. 137-375.000.
Korbell, George K., to Sheller-Globe Corporation. Field exerting and regulator circuit for a brushless alternator. 4,210,857, Cl. 322-28.000.
Kosbab, John V., to Dynamic Sports concepts, Inc. Modular broadhead arrowhead. 4,210,330, Cl. 273-106.50B.
Kosche, Horst, to Ciba-Geigy Corporation. Pressure-sensitive recording or copying material. 4,210,345, Cl. 282-27.500.
Koshelev, Alexandr G.: *See*—
Lavrentiev, Konstantin A.; Kretov, Svyatoslav D.; and Koshelev, Alexandr G., 4,210,945, Cl. 360-108.000.
Koskie, Earl T., Jr., to Dresser Industries, Inc. Method of making a rotary rock bit with seal recess washer. 4,209,890, Cl. 29-450.000.
Koslar, Manfred, to Siemens Aktiengesellschaft. Test device for indicating an electric voltage and/or the polarity thereof, and the passage of current through an electric conductor. 4,210,862, Cl. 324-51.000.
Kosters, Bernhard, to Teroson G.m.b.H. Plastisol of an acrylate polymer and a plasticizer. 4,210,567, Cl. 260-31.80R.
Kottsieper, Edward: *See*—
Haas, Edgar; and Kottsieper, Edward, 4,210,047, Cl. 83-530.000.
Kouba, Carroll C., to Westinghouse Electric Corp. Permanent magnet generator. 4,210,836, Cl. 310-112.000.
Koyakumaru, Hidefumi: *See*—
Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, 4,210,469, Cl. 148-16.000.
Kozlowski, Robert L. Wallpaper hand tool with interchangeable blades. 4,209,865, Cl. 7-105.000.
Kraayvanger, Allan G., to Perrigraphics, Inc. Display device. 4,209,928, Cl. 40-610.000.
Kraft, Paul: *See*—
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.

Kraftwerk Union Aktiengesellschaft: *See*—
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Kramer, Josef: *See*—
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.

Kraus, Bernd: *See*—
Peter, Cornelius; and Kraus, Bernd, 4,210,016, Cl. 73-116.000.

Kraus, Theodore C.: *See*—
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Krautkramer-Branson, Incorporated: *See*—
Renzel, Peter; and Vermoehlen, Werner, 4,210,904, Cl. 340-347.0AD.

Krebaum, Gerald E.: *See*—
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Krieff, Sidney K.: *See*—
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Krieger, Gerhard: *See*—
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Krieger, Peter: *See*—
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Krob, Erwin; and Weigl, Erwin, to TMC Corporation. Connecting element. 4,210,342, Cl. 280-636.000.

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Kubota, Naohiro: *See*—
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Kucheck, Leo: *See*—
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Kuchenbecker, Morris W., to American Can Company. Reclosable hinged blister card package. 4,210,246, Cl. 206-461.000.

Kuhn, Max: *See*—
Ruegger, Artur; and Kuhn, Max, 4,210,581, Cl. 260-112.50R.

Kulesza, Ralph J.; Wildman, John R.; Arias, Henry; and Breslow, Jeffrey D., to Marvin Glass & Associates. Rotatable target game. 4,210,331, Cl. 273-120.00R.

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Kummer, Werner: *See*—
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Kummerlin, Walter; and Kummerlin, Nikolaus A., 4,210,224, Cl. 182-207.000.

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Kunze, Claus: *See*—
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Kuo, Mau-Jung: *See*—
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,210,719, Cl. 435-41.000.

Kura, Kohei: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.

Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, to Hitachi, Ltd. Vacuum-type circuit interrupter. 4,210,790, Cl. 200-144.00B.

Kurtz, Walter: *See*—
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Kutaragi, Ken, to Sony Corporation. Video display apparatus having a flat X-Y matrix display panel. 4,210,934, Cl. 358-241.000.

Kvanta, Endre, to AB Medipharm. Process for fermentation of green fodder. 4,210,673, Cl. 426-53.000.

Kyowa Kagakukogyo Kabushiki Kaisha: *See*—
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Labatzke, Winfried: *See*—
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Label-Aire Inc.: *See*—
Crankshaw, Michael; and Kucheck, Leo, 4,210,484, Cl. 156-542.000.

LaBrie, Paul J., to Semiconductor Circuits, Inc. Method for producing analog-to-digital conversions. 4,210,903, Cl. 340-347.0NT.

Labrum, Joseph H., to Electro Controls Inc. Shutter system for stage-lighting spotlights. 4,210,955, Cl. 362-321.000.

Lachowicz, Eugene. Self-propelled steering device for trailers. 4,210,217, Cl. 180-13.000.

La Conti, Anthony B.: *See*—
Dempsey, Russell M.; Coker, Thomas G.; and La Conti, Anthony B., 4,210,501, Cl. 204-129.000.

Lad Research Industries, Inc.: *See*—
Porter, John H., 4,210,029, Cl. 73-705.000.

Lake, Ernest C. Wallpaper applicator. 4,210,485, Cl. 156-577.000.

Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., to NL Industries, Inc. Apparatus and method for positioning one part relative to another part. 4,209,891, Cl. 29-466.000.

Lamm, Gunther: *See*—
Dehnert, Johannes; Kurtz, Walter; and Lamm, Gunther, 4,210,583, Cl. 260-156.000.

Lampert, Heinz. Torque converter especially for the use in electro mobils. 4,210,032, Cl. 74-198.000.

Lane, Charles E., III, to Honeywell Inc. Multicolor multipoint recorder. 4,210,917, Cl. 346-34.000.

Langer, Alois A.: *See*—
Heilman, Marlin S.; and Langer, Alois A., 4,210,149, Cl. 128-419.00D.

Langworthy, Colin G.; and Jefferies, Ralph G., to Stothert & Pitt Limited. Safety control system for self-propelled road rollers. 4,209,988, Cl. 60-431.000.

Lapshev, Igor M.; Khodosov, Nikolai A.; and Berber, Viktor A. Centrifugal fluid cleaner. 4,210,276, Cl. 233-31.000.

Laser, Max. Reflectors. 4,210,954, Cl. 362-303.000.

LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., to Raytheon Company. Free-gyro optical seeker. 4,210,804, Cl. 250-203.00R.

Laughman, Clyde R. Condiment applying apparatus and method. 4,210,074, Cl. 99-494.000.

Laurent, Roger, to Pomagalski S.A. Overhead cable transport testing. 4,210,019, Cl. 73-158.000.

Laurin, Dean G.: *See*—
Gajewski, Henry; Laurin, Dean G.; Measells, Paul; and Webster, R. Daniel, 4,210,686, Cl. 428-35.000.

Lavanchy, Gerard A.; and Rossier, Marc-Henri, to Maschinenfabrik & Eisengiesserei Ed. Mezger. Automatically controlled pouring method and apparatus for metal casting. 4,210,192, Cl. 164-4.000.

La Voque, Edward C. Electrical plug pull. 4,210,377, Cl. 339-45.00R.

Lavrentiev, Konstantin A.; Kretov, Svyatoslav D.; and Koshelev, Alexandr G. Rotary magnetic head assembly. 4,210,945, Cl. 360-108.000.

Law, Eugene L.: *See*—
Hill, Eugene R.; and Law, Eugene L., 4,210,871, Cl. 455-137.000.

Lawrance, Richard J.; and Russell, John H., to General Electric Company. Electrolysis cell with controlled anolyte flow distribution. 4,210,512, Cl. 204-257.000.

Lazarenko, Eduard T.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.

Lazarre, Flavien: *See*—
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Lebacqz, Jean V., to United States of America, Energy. Trirotron: triode rotating beam radio frequency amplifier. 4,210,845, Cl. 315-5.250.

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Smith, Jennings T.; and LeBaron, George L., 4,210,906, Cl. 340-659.000.

Le Clear, Robert L.: *See*—
Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company, 4,209,869, Cl. 14-69.500.

Lee, Doo S. Refrigerating apparatus. 4,210,000, Cl. 62-417.000.

Lee, Richard J.; and Richardson, Eugene E., to Standard Oil Company (Indiana). Oxidation resistant lubricant composition. 4,210,545, Cl. 252-47.500.

Lee, Robert L. Dental apparatus. 4,209,909, Cl. 433-57.000.

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Leiper, Hugh C.: *See*—
Dawson, Gaynor W.; Leiper, Hugh C.; and Brix, Arthur T., 4,210,680, Cl. 426-641.000.

Leitner, Hermann: *See*—
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, 4,210,011, Cl. 72-234.000.

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McMillen, Russell G.; and Leitzman, Noel E., 4,210,221, Cl. 180-77.0TC.

Lentz, Ronald R., to Litton Systems, Inc. System and method for regulating power output in a microwave oven. 4,210,795, Cl. 219-10.55B.

Leonard, Lionel. Boxes. 4,210,274, Cl. 229-49.000.

Lesser, Joseph H., to Makhteshim Chemical Works, Ltd. Thiophosphoro-S-acylated hydrazones. 4,210,592, Cl. 260-347.200.

Levinsky, Roland J.: *See*—
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Lewellyn, Morris E.: *See*—
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Lewin, Helmut: *See*—
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Lewis, Jennings B., III; and Kelly, Peter P., to Union Carbide Corporation. Argon in the basic oxygen process to control slopping. 4,210,442, Cl. 75-60.000.

Li, Yao T. Film-type storm window. 4,210,191, Cl. 160-354.000.

Libbey-Owens-Ford Company: *See*—
Fisher, Arnold R., 4,210,052, Cl. 83-881.000.

Liberman, Harold J., to United States of America, Army. Electromechanical guidance actuator for a missile. 4,210,298, Cl. 244-3.210.

Licciardi, Bartholomew A. Baseball game. 4,210,335, Cl. 273-238.000.

Lidholm, Sven-Olof. Coffin. 4,209,880, Cl. 27-2.000.

Liebermann, Benno E. Method of transferring heat to food articles. 4,210,675, Cl. 426-233.000.

Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., to American Home Products Corporation. Antisecretory polypeptides. 4,210,636, Cl. 424-177.000.

Life Instruments Corporation: *See*—
Dick, Donald E.; Metz, Robert L.; and Elliott, Raymond D., 4,210,932, Cl. 358-130.000.

Lifel di Torta Franco & C. s.a.s.: *See*—
Torta, Franco; and Torta, Mario, 4,210,303, Cl. 248-429.000.

Lilja, Launo L.; and Makitalo, Valto J., to Outokumpu Oy. Means for producing a suspension of a powdery substance and a reaction gas. 4,210,315, Cl. 266-182.000.

Lillie, Christian: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.

Lin, Wayne H. T.: *See*—
Brown, James L.; Lin, Wayne H. T.; and Woods, James W., 4,210,418, Cl. 23-230.00B.

Lind, William F. Golf club including support attachment. 4,210,334, Cl. 273-162.00R.

Lindahl, Bengt E., to Svensk Lasthantering Bengt Lindahl AG. Roundsling. 4,210,089, Cl. 112-417.000.

Lindauer, Jerome, to International Flavors & Fragrances Inc. Process for aromatizing and/or deodorizing the environment surrounding the flush tank of a toilet. 4,209,863, Cl. 4-228.000.

Lindauer, Jerome, to International Flavors & Fragrances Inc. Cleanser and/or sanitizer and aroma emitting attachment for toilets and process for using same. 4,209,864, Cl. 4-228.000.

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Lindseth, Roy O. Seismic exploration technique. 4,210,968, Cl. 367-46.000.

Lindstrom, Nils A. E., to Svecia Silkcreen Maskiner AB. Printing machine. 4,210,077, Cl. 101-126.000.

Linn, Orville. Self-propelled swather. 4,209,963, Cl. 56-10.800.

Linzenkirchner, Edmund: *See*—
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List, Hansjorg: *See*—
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Litton Industrial Products, Inc.: *See*—
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Litton Systems, Inc.: *See*—
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Liu, Shin-Yng: *See*—
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Livesay, Richard E., to Caterpillar Tractor Co. Impact rock crusher. 4,210,292, Cl. 241-148.000.

Lockhead Corporation: *See*—
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Loeffler, Herbert H., to Arthur D. Little, Inc. Swim fin. 4,209,866, Cl. 9-304.000.

Loew, Peter: *See*—
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Loewe-Opta GmbH: *See*—
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Logan, Ted J.; and Underwood, David C., to Procter & Gamble Company, The. Process for separating esters of fatty acids. 4,210,594, Cl. 260-428.500.

Login, Robert B.; and Dutton, Daniel R., to BASF Wyandotte Corporation. Polyester-starch sized paper, sizing composition, and process therefor. 4,210,685, Cl. 427-361.000.

Lohman, Edmond L.: *See*—
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Lohr, Raymond J. Remote control car. 4,209,942, Cl. 46-253.000.

Loke, Harvey L. Water conditioner rotary valve structure. 4,210,532, Cl. 210-136.000.

Loos, John H., to White Consolidated Industries, Inc. Mounting for room air conditioner access door. 4,210,071, Cl. 98-94.0AC.

Loqvist, Kaj-Ragnar; and Bennstedt, Leif-Ake, to Wave Energy Development I Vastmanland Aktiebolag. Method for providing a surface coating on the wall in a cavity by means of electrolytic plating and the surface coating produced by the method. 4,210,497, Cl. 204-26.000.

L'Oreal: *See*—
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,210,755, Cl. 544-175.000.

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Louviere, Huey P. Kelly bushing guard. 4,210,213, Cl. 175-195.000.

LST Electronics, Inc.: *See*—
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Lubbers, Willi; and Krone, Uwe, to Nico-Pyrotechnik Hanns-Juergen Diederichs KG. Process for the generation of dense clouds for camouflage purposes. 4,210,555, Cl. 252-305.000.

Lucas Industries Limited: *See*—
Taylor, Joseph D. F., 4,210,856, Cl. 320-17.000.

Luchaco, David G.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.

Lundberg, Robert D.: *See*—
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Lutron Electronics Co., Inc.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.

Luttrell, Wondall R. Skip row attachment for planter. 4,210,260, Cl. 221-278.000.

Lux, Virginia J.: *See*—
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Lysenko, George P.; and Smith, Richard J., to Deere & Company. Door latch mechanism. 4,210,350, Cl. 292-86.000.

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Greiner, Harry; and Preuss, Friedrich, 4,210,078, Cl. 101-136.000.

Macaluso, Paul J.; and Clifford, Lawrence E., to Pitney Bowes Inc. Copying machine with electromagnetic scavenger assembly and process. 4,210,397, Cl. 355-15.000.

Machino, Katsuyuki: *See*—
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MacKenzie, Gordon C.: *See*—
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Maezawa, Shuzi, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece time zone display. 4,209,973, Cl. 368-84.000.

Magana, Cecil L.; and Spears, Gary D. Pre-wired electrical circuit box. 4,210,772, Cl. 174-59.000.

Magnaflux Corporation: *See*—
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Magnepan, Incorporated: *See*—
Winey, James M., 4,210,786, Cl. 179-115.5PV.

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Makowski, Henry S.; Lundberg, Robert D.; and Klein, Robert R., to Exxon Research & Engineering Co. Plasticization of neutralized sulfonated elastomeric polymer with organic carbamates. 4,210,568, Cl. 260-32.400.

Makushin, Mikhail P.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Malfroot, Thierry A.: *See*—
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Mann, James T., to Gulf Research and Development Company. Stabilized hydraulic fluid composition. 4,210,541, Cl. 252-32.70E.
Mann, James T., to Gulf Research and Development Company. Multicomponent stabilized hydraulic fluid. 4,210,542, Cl. 252-32.70E.
Mannina, Rosario M. Transparent cement form and method of form usage. 4,210,304, Cl. 249-22.000.
Manno, Joseph T. Fishing rig assembly. 4,209,933, Cl. 43-43.150.
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Mansukhani, Ishwar R., to Whittaker Corporation. Ink jet inks. 4,210,916, Cl. 346-1.100.
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Marburg, Stephen; and Kollonitsch, Janos, to Merck & Co., Inc. Process for the preparation of 3-carbamoyl cephalosporins using isocyanates. 4,210,750, Cl. 544-21.000.
Marchive, Daniel: *See*—
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Marcilly, Christian, to Institut Francais du Petrole. Process for aromatic hydrocarbon conversion and catalyst therefor. 4,210,770, Cl. 585-474.000.
Margen, Peter H. E.; and Naslund, Rolf P., to Aktiebolaget Atomenergi. Heat exchanger apparatus. 4,210,203, Cl. 165-163.000.
Marinace, John C., to International Business Machines Corporation. Epitaxial tunnels from intersecting growth planes. 4,210,470, Cl. 148-33.200.
Mark, Victor, to General Electric Company. Process for obtaining halogenated diphenols. 4,210,765, Cl. 568-726.000.
Markofsky, Sheldon B., to W. R. Grace & Co. Method of imparting wet strength to paper products. 4,210,489, Cl. 162-164.00R.
Markunas, Peter C.: *See*—
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Marquis, Edgar E.; and Draghi, James A., to Robertshaw Controls Company. Timer controlled control system and timer construction therefor. 4,210,824, Cl. 307-141.000.
Marsh, James P.; and Steadman, Howard L., to Systems Control, Inc. Processor for dynamic programming. 4,210,962, Cl. 364-402.000.
Marshall, Robert M.; and Dardoufas, Kimon C., to Allied Chemical Corporation. Production of polyester yarn. 4,210,700, Cl. 428-395.000.
Martin, Guy E.: *See*—
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Martin, William H., Jr., to United States of America, Navy. Long distance underwater communication. 4,210,971, Cl. 367-134.000.
Marvin Glass & Associates: *See*—
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Meyer, Burton C.; Kripak, Leonid; and Fauser, Fritz, 4,209,940, Cl. 46-145.000.
Morrison, Howard J.; and Wildman, John R., 4,210,324, Cl. 273-1.00R.
Marvin, Herbert Z.; Lohman, Edmond L.; and Lohman, Robert C. Sliding cover assembly for open body trucks. 4,210,361, Cl. 296-210.000.
Maryanoff, Bruce E.; and McComsey, David F., to McNeil Laboratories, Incorporated. Reduction of indole compounds to indoline compounds. 4,210,590, Cl. 260-326.11R.
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Ishiwatari, Hiromasa; and Yamada, Yoshinori, 4,210,024, Cl. 73-362.500.
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Patton, John T., Jr.; and McBrayer, Robert L., 4,210,728, Cl. 521-160.000.
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McSwain, Edward D. Temperature-responsive automatic ventilator. 4,210,279, Cl. 236-49.000.

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Baldwin, John J.; and McClure, David E., 4,210,653, Cl. 424-263.000.
Marburg, Stephen; and Kollonitsch, Janos, 4,210,750, Cl. 544-21.000.

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Kleine, Charles A.; and Middleton, Verne L., 4,210,127, Cl. 126-444.000.

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Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

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Bridger, Robert F., 4,210,599, Cl. 260-462.00C.
Gorring, Robert L.; and Smith, Robert L., 4,210,521, Cl. 208-89.000.

Groenendyke, Goethe M., deceased; and Hoehn, Gustave L., Jr., 4,210,869, Cl. 324-349.000.
Peters, Alan W., 4,210,525, Cl. 208-212.000.
Yan, Tsoung Y., 4,210,423, Cl. 44-1.00C.
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Clayson, Arthur J.; and Fox, Austin L., 4,209,956, Cl. 53-396.000.
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Hirzy, J. William, 4,210,730, Cl. 525-440.000.
Howe, Robert K., 4,210,762, Cl. 548-145.000.
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Morcom, Paul J. Collapsible article carrier. 4,210,241, Cl. 206-172.000.
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., to Harris Corporation. I^2L Integrated circuit and process of fabrication. 4,210,925, Cl. 357-46.000.
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Mortimer, Ivan, to Girling Limited. Anti-skid vehicle braking systems. 4,210,370, Cl. 303-118.000.
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Schwan, Thomas J., 4,210,761, Cl. 548-320.000.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Electrode element for monopolar electrolysis cells. 4,210,516, Cl. 204-284.000.
Moskowitz, Jacob F., to Raytheon Company. Gain control amplifier circuit. 4,210,874, Cl. 330-134.000.
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Mueller, Dale A.; and Serber, Stephen L., to Honeywell Inc. Heat pump system defrost control. 4,209,994, Cl. 62-155.000.
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Gerkema, Jan; and Muijderman, Everhardus A., 4,210,371, Cl. 308-9.000.
Mullen, James. Repair kit. 4,210,242, Cl. 206-231.000.
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Munie, Julius C. Mixing apparatus. 4,210,166, Cl. 137-271.000.
Munn, Gerhard, to Rheinmetall GmbH. Servo-release mechanism. 4,210,059, Cl. 89-132.000.
Munson, Harry R., Jr., to A. H. Robins Company, Inc. Mucolytic thiophenecarboxamido alkyl mercaptans. 4,210,666, Cl. 424-275.000.
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo. Abietamide derivatives, their production and use. 4,210,671, Cl. 424-324.000.
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, to Mitsui Mining Co. Ltd.; and Mitsui Coke Co. Ltd. Preparation of carbonaceous products. 4,210,517, Cl. 208-8.0LE.
Murakami, Yasushi: *See*—
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Murray, Lee J., to American Can Company. Jet ink compositions. 4,210,566, Cl. 260-31.80T.
Mutschler, Thomas A.; and Zimmerman, Gary J., to Aluminum Company of America. Pneumatic anode positioning system. 4,210,513, Cl. 204-225.000.
Myers, Ronald W.: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., 4,210,376, Cl. 339-17.0LC.
Myrmel, Kurt: *See*—
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, 4,210,420, Cl. 23-230.00B.
Nace, Donald W., to Allis-Chalmers Corporation. Eccentric pin positive locking device for hydraulic turbine wicket gates. 4,210,408, Cl. 415-163.000.
Nadeau, William C.: *See*—
Brockman, Raymond G.; and Nadeau, William C., 4,210,141, Cl. 128-272.000.
Nagaishi, Hastuo: *See*—
Nakamura, Koyo; and Nagaishi, Hastuo, 4,210,112, Cl. 123-571.000.
Nagakura, Katsuhiko: *See*—
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
Nagata, Katsuyuki: *See*—
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,499, Cl. 204-38.00A.
Hirono, Hatsuo; Nagata, Katsuyuki; and Doguchi, Nobushige, 4,210,695, Cl. 428-209.000.
Nagel, Otto: *See*—
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Nagumo, Shinichi: *See*—
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Naidich, Herbert H.; and Westmark, John E., to Cincinnati Electronics Corporation. Pulsed doppler moving target detector. 4,210,912, Cl. 343-7.700.
Nakagami, Tatsuro: *See*—
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Nakagawa, Kazuyuki: *See*—
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,210,753, Cl. 544-128.000.

Nakahara, Yutaka: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, to Nissan Motor Company, Limited. Multi-cylinder internal combustion engine. 4,210,109, Cl. 123-76.000.
Nakamura, Akio: *See*—
Sado, Ryoichi; and Nakamura, Akio, 4,210,895, Cl. 338-99.000.
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine. 4,210,104, Cl. 123-259.000.
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, to Hitachi, Ltd. Video signal play-back circuit. 4,210,942, Cl. 360-65.000.
Nakamura, Koyo; and Nagaishi, Hastuo, to Nissan Motor Company, Limited. Electronically controlled exhaust gas recirculation system in internal combustion engine. 4,210,112, Cl. 123-571.000.
Nakamura, Tadahiko; and Nakano, Kenji, to Sony Corporation. Automatic tracking servo control system. 4,210,943, Cl. 360-70.000.
Nakamura, Yoshihisa: *See*—
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.
Nakano, Kenji: *See*—
Nakamura, Tadahiko; and Nakano, Kenji, 4,210,943, Cl. 360-70.000.
Nakata Giken Co., Ltd.: *See*—
Nakata, Kunii, 4,210,036, Cl. 81-15.800.
Nakata, Josuke: *See*—
Mihashi, Yutaka; and Nakata, Josuke, 4,210,466, Cl. 148-1.500.
Nakata, Kunii, to Nakata Giken Co., Ltd. Tire-chain handling tools. 4,210,036, Cl. 81-15.800.
Nakatani, Keiji, to Minolta Camera Kabushiki Kaisha. Roll paper cutting arrangement. 4,210,044, Cl. 83-241.000.
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, to Hitachi, Ltd. Color picture tube with shadow mask. 4,210,842, Cl. 313-403.000.
Naslund, Rolf P.: *See*—
Margen, Peter H. E.; and Naslund, Rolf P., 4,210,203, Cl. 165-163.000.
Nassau Recycle Corporation: *See*—
Cole, Joseph L, 4,210,198, Cl. 164-433.000.
National Research Development Corporation: *See*—
Kerr, Ian M.; Brown, Ronald E.; and Hovanessian, Ara G., 4,210,746, Cl. 536-27.000.
Soothill, John F.; and Levinsky, Roland J., 4,210,622, Cl. 422-61.000.
National Semiconductor Corporation: *See*—
Wong, Thomas S. W.; Wong, Wing Y.; and Chow, Edwin M. W., 4,210,829, Cl. 307-296.00R.
National Union Electric Corporation: *See*—
Schaefer, Harold W., 4,209,873, Cl. 15-182.000.
Naughton, Francis C.: *See*—
Herman, Daniel F.; and Naughton, Francis C., 4,210,572, Cl. 260-40.00R.
Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, to Minolta Camera Kabushiki Kaisha. Electronic control circuitry for terminating flash output. 4,210,849, Cl. 315-241.00P.
NCR Corporation: *See*—
Brower, Ronald W., 4,210,465, Cl. 148-1.500.
Neiman, Alexandr A.: *See*—
Palekhin, Vladimir A.; Neiman, Alexandr A.; and Kagan, Veniamin G., 4,210,902, Cl. 340-310.00A.
Nelli, Giuseppe: *See*—
Di Battista, Piero; Fontanelli, Renzo; Gratani, Francesco; and Nelli, Giuseppe, 4,210,576, Cl. 260-45.8NE.
Nelson, Marvin D.: *See*—
Kabat, John L.; and Nelson, Marvin D., 4,210,823, Cl. 307-117.000.
Nestler, Gerhard: *See*—
Hansen, Guenter; Merger, Franz; Nestler, Gerhard; and Zeidler, Georg, 4,210,414, Cl. 8-639.000.
Nestor Engineering Associates, Inc.: *See*—
Nestor, Jack; and Devine, John W., Jr., 4,210,145, Cl. 128-305.000.
Nestor, Jack; and Devine, John W., Jr., 4,210,147, Cl. 128-327.000.
Nestor, Jack; and Devine, John W., Jr., to Nestor Engineering Associates, Inc. Surgical hole cutter for square hair transplant plugs. 4,210,145, Cl. 128-305.000.
Nestor, Jack; and Devine, John W., Jr., to Nestor Engineering Associates, Inc. Head tourniquet having incision closing capability. 4,210,147, Cl. 128-327.000.
Nestor, Jack: *See*—
Ernest, Raymond; and Nestor, Jack, 4,209,871, Cl. 15-167.00R.
Netafim Mutzarei Hashkaya Vetiftuf Bekibbutz Hatzerm: *See*—
Mehoudar, Raphael, 4,210,287, Cl. 239-542.000.
Neubert, Terry C.; and Anderson, Donald W., to General Tire & Rubber Company, The. Adhesion method employing lignin amine cord adhesives. 4,210,475, Cl. 156-110.00A.
Neujens, Georges J.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.
Neveux, Rene R., to Societe Anonyme Francaise du Ferodo. Motor-fan unit with cooled motor. 4,210,833, Cl. 310-58.000.
Neveux, Rene R., to Societe Anonyme Francaise du Ferodo. Fan with a cooled motor. 4,210,835, Cl. 310-62.000.
Newhouse, Paul D.; and Allen, Charles M., to Westinghouse Electric Corp. Passive detection and tracking apparatus. 4,210,913, Cl. 343-123.000.
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Veesicol Chemical Corporation. Novel intumescent composition. 4,210,452, Cl. 106-18.180.
Nico-Pyrotechnik Hanns-Juergen Diederichs KG: *See*—
Lubbers, Willi; and Krone, Uwe, 4,210,555, Cl. 252-305.000.
Nicolay, Hugh C.: *See*—
Morcom, William R.; Nicolay, Hugh C.; and Cox, Eugene R., 4,210,925, Cl. 357-46.000.
Nield, Gerald L.: *See*—
Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., 4,210,764, Cl. 568-618.000.
Nifco Inc.: *See*—
Hara, Kunio, 4,210,893, Cl. 337-407.000.
Nikolaev, Anatoly F.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.
Nikolaev, Vladimir P.; Chaika, Leopold I.; and Ivanov, Ivan V. Position sensor of linearly moving bodies. 4,210,865, Cl. 324-207.000.
Nilsen, Christopher. Tree clamp and shear support structure. 4,210,183, Cl. 144-34.00E.
Nilsson, Bengt: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, to Sony Corporation. Method and system for synchronizing the movement of plural recording media. 4,210,939, Cl. 360-14.000.
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, to Takeda Chemical Industries, Ltd. Removal of nitrogen oxides. 4,210,628, Cl. 423-239.000.
Nippon Electric Co., Ltd.: *See*—
Fujita, Kazunori, 4,210,782, Cl. 179-18.0ES.
Yonezu, Hiroo, 4,210,878, Cl. 331-94.50H.
Nippon Kogaku K.K.: *See*—
Sato, Akihiko; and Goto, Tetsuro, 4,210,394, Cl. 354-234.000.
Nippon Oil Company, Ltd.: *See*—
Hayashi, Hideo; and Sato, Hisatake, 4,210,733, Cl. 525-529.000.
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.
Nippon Paint Co., Ltd.: *See*—
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, 4,210,713, Cl. 430-284.000.
Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.
Sakakibara, Yasuyuki, 4,210,908, Cl. 340-754.000.
Nippon Steel Corp.: *See*—
Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, 4,210,469, Cl. 148-16.000.
Nippondenso Co., Ltd.: *See*—
Sakai, Toshiyasu, 4,210,802, Cl. 235-483.000.
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Warm air intake system for an internal combustion engine. 4,210,115, Cl. 123-122.00D.
Nishida, Masamitsu: *See*—
Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, 4,210,546, Cl. 252-62.900.
Nishida, Minoru: *See*—
Imanaka, Hiroshi; and Nishida, Minoru, 4,210,635, Cl. 424-114.000.
Nishimoto, Takehiko: *See*—
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Nishimura, Katsuyoshi: *See*—
Tsukada, Naonobu; and Nishimura, Katsuyoshi, 4,209,907, Cl. 433-33.000.
Nishimura, Sanji: *See*—
Watanabe, Morio; and Nishimura, Sanji, 4,210,502, Cl. 204-151.000.
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, to Sanyo Electric Co., Ltd. Sound synthesizing apparatus. 4,210,781, Cl. 179-15.55T.
Nishino, Hiroshi: *See*—
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, 4,210,628, Cl. 423-239.000.
Nissan Motor Company, Limited: *See*—
Adachi, Masahiro, 4,210,357, Cl. 296-84.00B.
Miyamori, Yukio; and Masaki, Kenji, 4,209,981, Cl. 60-274.000.
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Nakamura, Koyo; and Nagaishi, Hastuo, 4,210,112, Cl. 123-571.000.
Ushiku, Kenichi; and Hasegawa, Akira, 4,210,789, Cl. 200-61.45R.
Nitta, Tsuneharu; Terada, Ziro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Terminal unit for electrical circuit elements and sensing device employing said terminal unit. 4,210,894, Cl. 338-35.000.
Niven, David A.: *See*—
Tantillo, Robert M.; and Niven, David A., 4,210,538, Cl. 210-333.00A.
NJM, Inc.: *See*—
Wolff, Edwin K.; and Schwenzer, Alfred F., 4,210,481, Cl. 156-357.000.

NL Industries, Inc.: *See—*
Herman, Daniel F., 4,210,571, Cl. 260-40.00R.
Herman, Daniel F.; and Naughton, Francis C., 4,210,572, Cl. 260-40.00R.
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., 4,209,891, Cl. 29-466.000.
Noble, Robert T., to Texas Instruments Incorporated. Electronic timepiece circuits. 4,209,974, Cl. 368-84.000.
Noce, Louis O.: *See—*
Morse, Phillip H.; Noce, Louis O.; and Basta, Michael I., 4,210,178, Cl. 137-625.500.
Noda, Isao: *See—*
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine injected accumulation chamber. 4,210,105, Cl. 123-277.000.
North, James C.; and Schinke, David P., to Bell Telephone Laboratories, Incorporated. Edge illuminated photodetector with optical fiber alignment. 4,210,923, Cl. 357-30.000.
Novcaski, Russell G.: *See—*
Frye, Dana E.; Novcaski, Russell G.; Mills, Jack; and Horneck, Richard H., 4,210,247, Cl. 206-494.000.
Nozawa, Shigeo, to Kyowa Kagakukogyo Kabushiki Kaisha. Method of hydroponic culture. 4,209,944, Cl. 47-59.000.
Nozu, Toshiro: *See—*
Tada, Hiroshi; and Nozu, Toshiro, 4,209,868, Cl. 14-16.100.
Nucledyne Engineering Corp.: *See—*
Kleimola, Frank W., 4,210,614, Cl. 261-124.000.
Obayashi, Hidehito; and Okamoto, Hiroshi, to Hitachi, Ltd. Oxygen sensor. 4,210,509, Cl. 204-195.00S.
Obear, Robert F., to Western Gear Corporation. Workpiece conditioning grinder system. 4,209,948, Cl. 51-92.00R.
Obendorf, Johann; Dormann, Gunter; Gras, Rainer; and Wolf, Elmar, to Chemische Werke Huls Aktiengesellschaft. Method for the coating of glass surfaces. 4,210,687, Cl. 428-35.000.
Obermair, Gilbert K. J., to J. W. Spear & Sons Limited. Alignment game. 4,210,337, Cl. 273-264.000.
Obler, Henry D., to United States of America, National Aeronautics and Space Administration. Apparatus for supplying conditioned air at a substantially constant temperature and humidity. 4,210,278, Cl. 236-49.000.
O'Brien, Edward F.: *See—*
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.
Occidental Oil Shale, Inc.: *See—*
Hutchins, Ned M.; and Ridley, Richard D., 4,210,366, Cl. 299-2.000.
Occidental Petroleum Corporation: *See—*
Casperson, Philip W., 4,210,438, Cl. 71-34.000.
Oda, Hajime: *See—*
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.
Odds, David J. H., to F. A. Hughes and Company Limited. Underwater jet blasting apparatus. 4,209,952, Cl. 51-415.000.
Ode, Sadao; and Hatuse, Toshikazu, to Citizen Watch Co., Ltd. Device for detachably mounting glass on timepiece cases. 4,210,798, Cl. 219-243.000.
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, to AGFA-Gevaert, A.G. Photographic material with improved properties. 4,210,714, Cl. 430-372.000.
Ogata, Yoshihiro: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Ogata, Yoshiro, to Matsushita Electronics Corporation. Metal vapor laser. 4,210,876, Cl. 331-94.50G.
Ogawa & Co., Ltd.: *See—*
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Modular toy building units. 4,209,934, Cl. 46-31.000.
Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus device for zoom lens. 4,210,387, Cl. 350-187.000.
Ogawa, Tadashi: *See—*
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.
Ogawa, Takuzo: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Ogihara, Masuo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.
Ogino, Hajime: *See—*
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Oguri, Ichiro, to Sharp Kabushiki Kaisha. Turntable drive in a microwave oven. 4,210,794, Cl. 219-10.55F.
O'Hanlon, Edward J. Solar heat collector. 4,210,129, Cl. 126-447.000.
O'Hanlon, Edward J. Low cost heat storage tank and heat exchanger. 4,210,201, Cl. 165-104.00S.
O'Hara, Mark J.: *See—*
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Ohata, Katsuya: *See—*
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Ohinouye, Tsuneo: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.
Ohmori, Masayuki; and Ito, Norio, to Sony Corporation. Projecting apparatus. 4,210,928, Cl. 358-60.000.
Ohnishi, Noriaki: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.
Ohno, Tetatsu. Grinding method and apparatus. 4,209,947, Cl. 51-7.000.
Ohta, Yoshiharu: *See—*
Naya, Mikio; Ohta, Yoshiharu; and Hosomizu, Hiroshi, 4,210,849, Cl. 315-241.00P.
Ohtani, Iwao, to Tokico Ltd. Volumetric type flowmeter having circular and involute tooth shape rotors. 4,210,410, Cl. 418-150.000.
Ohtsubo, Toshikatsu: *See—*
Murakami, Hisashi; Ohtsubo, Toshikatsu; Fukuda, Kenji; and Ohnishi, Noriaki, 4,210,517, Cl. 208-8.0LE.
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Ojima, Teruhiko: *See—*
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Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, to Chugai Seiyaku Kabushiki Kaisha. Urea derivatives, process for preparing the same and herbicidal composition containing the same. 4,210,440, Cl. 71-98.000.
Okamoto, Hiroshi: *See—*
Obayashi, Hidehito; and Okamoto, Hiroshi, 4,210,509, Cl. 204-195.00S.
Okamura, Masahiro: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.
Okazaki, Tatsuo: *See—*
Okazaki, Yasukichi; and Okazaki, Tatsuo, 4,210,134, Cl. 128-24.100.
Okazaki, Yasukichi; and Okazaki, Tatsuo, to Kabushikigaisha OMCO. Pillow for manual therapeutics. 4,210,134, Cl. 128-24.100.
Oki, Hisashi: *See—*
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,210,105, Cl. 123-277.000.
Olin Corporation: *See—*
Kershner, Stuart D.; and Smith, Ken P., 4,210,307, Cl. 249-202.000.
Kleine, Charles A.; and Middleton, Verne L., 4,210,127, Cl. 126-444.000.
Milnes, Frank J.; and Parziale, John R., 4,210,543, Cl. 252-46.700.
Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., 4,210,727, Cl. 521-137.000.
Silva, Joseph W.; and Duffield, Albert J., 4,209,889, Cl. 29-432.000.
Winter, Joseph, 4,209,885, Cl. 29-157.30V.
Winter, Joseph; Breedis, John F.; and Mravic, Brian, 4,209,886, Cl. 29-157.30V.
Ollivier, Jean: *See—*
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Olsen, Robert A., to Warner Electric Brake & Clutch Company. Field assembly for an electromagnet. 4,210,890, Cl. 335-281.000.
Olson, Daniel R.: *See—*
Schroeter, Siegfried H.; and Olson, Daniel R., 4,210,699, Cl. 428-331.000.
Olson, Stewart B.: *See—*
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Olympus Optical Co., Ltd.: *See—*
Ikeda, Yoshitsugi, 4,210,388, Cl. 350-214.000.
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Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.
Omori, Yasuzi: *See—*
Ikeda, Tadayoshi; Omori, Yasuzi; and Ikeda, Saizo, 4,210,696, Cl. 428-212.000.
Onoda, Michio: *See—*
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Oono, Hideshi: *See—*
Kume, Kazunari; Watanabe, Minoru; Oono, Hideshi; and Tamaru, Munetaka, 4,209,970, Cl. 368-76.000.
Orenstein, Henry, to Toy Builders. Appendage operated toys. 4,209,938, Cl. 46-116.000.
Orofino, Michael J. Sanitary pickup device for animal feces. 4,210,351, Cl. 294-1.0BB.
Orth, Dieter: *See—*
Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, 4,210,651, Cl. 424-263.000.
Ortho Diagnostics Inc.: *See—*
Baughman, D. Joe; Lytwyn, Ann; and Myrmel, Kurt, 4,210,420, Cl. 23-230.00B.

Osakabe, Kuniharu: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.

Osburg, Dieter, to Jagenberg Werke Aktiengesellschaft. Slitter having adjustable circular knives. 4,210,045, Cl. 83-497.000.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Co., Inc. Undercarriage for adverse terrain vehicle. 4,210,218, Cl. 180-24.120.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Co., Inc. Undercarriage for adverse terrain vehicle. 4,210,219, Cl. 180-24.120.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, 4,210,753, Cl. 544-128.000.

Ott, Louis E.: *See*—
Windgassen, Richard J.; and Ott, Louis E., 4,210,437, Cl. 71-28.000.

Ottaway, Gerald H.: *See*—
Bailey, Jack H.; and Ottaway, Gerald H., 4,210,931, Cl. 358-128.500.

Ouchi, Hiromu; Nishida, Masamitsu; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Piezoelectric ceramic compositions. 4,210,546, Cl. 252-62.900.

Outboard Marine Corporation: *See*—
Fuelling, William, Jr.; and Heismann, Richard A., 4,209,964, Cl. 56-11.200.

Outokumpu Oy: *See*—
Lilja, Launo L.; and Makitalo, Valto J., 4,210,315, Cl. 266-182.000.

Ovcharov, Alexandr M.: *See*—
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.

Ovdienko, Yaroslav A.: *See*—
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F., 4,210,569, Cl. 260-328.0EP.

Owens-Corning Fiberglas Corporation: *See*—
Evans, Alton, Jr., 4,210,067, Cl. 93-1.00F.
McCombs, Frank P., 4,210,562, Cl. 260-14.000.

Owens-Illinois, Inc.: *See*—
Amberg, Christopher P.; and Belcher, Samuel L., 4,210,256, Cl. 220-254.000.
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., 4,210,623, Cl. 422-101.000.

Owens, Warner R. Sprinkler head trimming device. 4,209,903, Cl. 30-302.000.

Paajanen, Erkki. Clamp. 4,209,879, Cl. 24-248.00R.

Paglericcio, Paul F.: *See*—
Dreyer, Bernard F.; and Paglericcio, Paul F., 4,210,162, Cl. 132-9.000.

Palekhin, Vladimir A.; Neiman, Alexandr A.; and Kagan, Veniamin G. Device for telemetering loads on power transmission line conductors. 4,210,902, Cl. 340-310.00A.

Pall Corporation: *See*—
Adiletta, Joseph G., 4,210,697, Cl. 428-272.000.

Palma, Florencio N. Sprinkler control valve. 4,210,169, Cl. 137-487.500.

Pan, Peter N. Y., to Continental Group, Inc., The. Self-venting end unit for pressure packaging. 4,210,255, Cl. 220-209.000.

Panasjuk, Vadim S.: *See*—
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.

Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased (by Fong, Yukiye, executrix), to United States of America, Agriculture. Shrinkproofing of fabrics of wool. 4,210,415, Cl. 8-128.00A.

Parker, Herman. Apparatus for rocket sled game. 4,209,935, Cl. 46-44.000.

Parsons, James D.; and Wike, Paul S., to Union Tank Car Company. Railroad tank car. 4,210,254, Cl. 220-22.000.

Parsons, James R.: *See*—
Broyhill, Roy F.; and Parsons, James R., 4,210,407, Cl. 414-407.000.

Parziale, John R.: *See*—
Milnes, Frank J.; and Parziale, John R., 4,210,543, Cl. 252-46.700.

Paschal, Gloria C.; and Thompson, Gerald L., to Eli Lilly and Company. Vindesine synthesis. 4,210,584, Cl. 260-244.400.

Pate, Fred L. Spinner bait fishing lure. 4,209,932, Cl. 43-42.110.

Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., to Raytheon Company. Twin air classifier system. 4,210,527, Cl. 209-152.000.

Patil, Arvind S.; and Argade, Shyam D., to BASF Wyandotte Corporation. Thermoplastic fibers as separator or diaphragm in electrochemical cells. 4,210,515, Cl. 204-266.000.

Patterson, James A., to Specific Volume Systems, Inc. Method for determination and grading of precious minerals. 4,210,027, Cl. 73-432.00R.

Patton, John T., Jr.; and McBrayer, Robert L., to BASF Wyandotte Corporation. Preparation of high resiliency polyurethane foams. 4,210,728, Cl. 521-160.000.

Patzold, Walter: *See*—
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.

Paulitsch, Hans: *See*—
Vlad, Constantin; and Paulitsch, Hans, 4,210,010, Cl. 72-201.000.

Paulson, Thomas E., to Magnaflux Corporation. Linearizing circuit for a non-destructive testing instrument having a digital display. 4,210,866, Cl. 324-222.000.

Paulus, Helmut, to Saint-Gobain Industries. Cutting device with rotating cutters. 4,210,050, Cl. 83-848.000.

Paxson, William J.: *See*—
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., 4,210,527, Cl. 209-152.000.

PCR, Inc.: *See*—
Greer, Sheldon, 4,210,638, Cl. 424-180.000.

Pedrini, Ivano. Portable cooking apparatus suitable as an oven or as a grill. 4,210,072, Cl. 99-340.000.

Peetz, Wolfgang; and Klaissle, Siefgried, to Hawera Probst GmbH & Co. Rock drill with helical dust conveying groove. 4,210,215, Cl. 175-394.000.

Pegler Hattersley Limited: *See*—
Hanson, Geoffrey, 4,210,312, Cl. 251-258.000.

Pelavin, Milton H., to Technicon Instruments Corporation. Method and apparatus for the non-invasive determination of the characteristics of a segmented fluid stream. 4,210,809, Cl. 250-343.000.

Peltie, Patrick, to POMA 2.000 S.A. Anti-collision device for passive vehicles. 4,210,084, Cl. 104-178.000.

Pennwalt Corporation: *See*—
Shetty, Bola V., 4,210,749, Cl. 542-469.000.

Perlin, Alfred R., to Kendall Company, The. Artificial sphincter with collection bag. 4,210,131, Cl. 128-1.00R.

Perlin, Alfred R., to Kendall Company, The. Artificial sphincter. 4,210,132, Cl. 128-1.00R.

Perrigraphics, Inc.: *See*—
Kraayvanger, Allan G., 4,209,928, Cl. 40-610.000.

Perrotta, Kenneth A., to Whatman Reeve Angel Limited. Improved filter tube. 4,210,540, Cl. 210-497.00R.

Perry, Elijah R., to Electric Power Research Institute, Inc. Filled polymer electrical insulator. 4,210,774, Cl. 174-140.00R.

Peter, Cornelius; and Kraus, Bernd, to Robert Bosch GmbH. Flow rate meter with temperature-dependent resistor. 4,210,016, Cl. 73-116.000.

Peter, Heinz: *See*—
Pfeifer, Josef; and Peter, Heinz, 4,210,742, Cl. 528-346.000.
Pfeifer, Josef; and Peter, Heinz, 4,210,743, Cl. 528-347.000.

Peters, Alan W., to Mobil Oil Corporation. Hydrodenitrogenation of demetallized residual oil. 4,210,525, Cl. 208-212.000.

Petersen, Robert J., to Midwest Research Institute. Blood compatible polymers and applications thereof. 4,210,529, Cl. 210-22.00A.

Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Transparent polyamides from branched chain diamine. 4,210,742, Cl. 528-346.000.

Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. Transparent polyamides from branched chain diamines. 4,210,743, Cl. 528-347.000.

Pfeifer, Josef: *See*—
Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.

Pfizer Inc.: *See*—
Belletire, John L., 4,210,663, Cl. 424-275.000.
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., 4,210,667, Cl. 424-281.000.
Sarges, Reinhard, 4,210,756, Cl. 546-15.000.

Pfleiderer, Ernst: *See*—
Monsheimer, Rolf; and Pfleiderer, Ernst, 4,210,721, Cl. 435-69.000.

Phillips Petroleum Company: *See*—
Blore, James H., 4,209,881, Cl. 28-243.000.

Phillips, William W., to Shaymar, Inc. Speaker system. 4,210,784, Cl. 179-146.00H.

Pichler, Ludwig: *See*—
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,210,659, Cl. 424-273.00R.

Picot S.A.: *See*—
Michel, Alain J., 4,210,007, Cl. 72-8.000.

Pilewski, John J.: *See*—
Staats, Clyde; and Pilewski, John J., 4,209,949, Cl. 51-151.000.

Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, to AB Akerlund & Rausing. Method of making tear opening devices for containers. 4,210,618, Cl. 264-130.000.

Pine, Herbert J.: *See*—
Munger, Stanley H.; and Pine, Herbert J., 4,210,712, Cl. 430-275.000.

Pinke, Paul A., to UOP Inc. Manufacture of linear primary aldehydes and alcohols. 4,210,608, Cl. 568-451.000.

Pinto, Alwyn, to Imperial Chemical Industries Limited. Methanol distillation process. 4,210,495, Cl. 203-22.000.

Pioneer Electronic Corporation: *See*—
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,210,944, Cl. 360-74.200.
Takaoka, Saburo; and Tsuda, Youichiro, 4,210,828, Cl. 307-268.000.

Piteau, Marc D.; and Malfroot, Thierry A., to Societe Nationale des Poudres et Explosifs. Process for the industrial synthesis of vinyl and isopropenyl chloroformate and thiochloroformate. 4,210,598, Cl. 260-455.00B.

Pitney Bowes Inc.: *See*—
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.
Macaluso, Paul J.; and Clifford, Lawrence E., 4,210,397, Cl. 355-15.000.

Pittala, John. Doll using circulating fluid to simulate body temperature. 4,209,939, Cl. 46-116.000.

Pitts, Clyde T.: *See*—
Hermsdorf, Horst G.; and Pitts, Clyde T., 4,209,982, Cl. 60-325.000.

Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, to Henkel Kommanditgesellschaft auf Aktien. Fine-particulate alkali metal aluminosilicates in the process of washing and cleaning rawhides and fur skins. 4,210,416, Cl. 8-139.100.

Platamone, Vito, Jr. Adjustable ligature for musical instrument. 4,210,055, Cl. 84-383.00R.

Pleasance, Lyn D.; Riedel, Ernest P.; and Weaver, Lelland A. C., to Westinghouse Electric Corp. Split ground state atomic iodine or bromine laser. 4,210,877, Cl. 331-94.5PE.

Plesko, Edward J. Air conversion for internal combustion engines. 4,210,062, Cl. 91-54.000.

Plessers, Hendrik S.: *See*—
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., 4,210,816, Cl. 250-468.000.

Pogson, John T.: *See*—
Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., 4,210,847, Cl. 315-111.900.

Pohl, Hans-Joachim: *See*—
Friedel, Klaus; Dammann, Ehrhard; Pohl, Hans-Joachim; Schutt, Wolfgang; and Jensen, Hans-Ludwig, 4,210,504, Cl. 204-180.00R.

Poitevin, Jean-Pierre R.; and Brossard, Pierre C. Four-phase staggered shift keying modulator system. 4,210,879, Cl. 332-9.00R.

Polaroid Corporation: *See*—
Cincotta, Louis; and Foley, James W., 4,210,752, Cl. 544-33.000.
Corben, Leo D., 4,210,450, Cl. 430-567.000.

Pollehn, Herbert K.; and Bratton, Jerry L., to United States of America, Army. Method of making thin antireflection coating for electro-optical device. 4,210,681, Cl. 427-64.000.

Polukhin, Dmitry I.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

POMA 2.000 S.A.: *See*—
Peltie, Patrick, 4,210,084, Cl. 104-178.000.

Pomagalski S.A.: *See*—
Laurent, Roger, 4,210,019, Cl. 73-158.000.

Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., to Beecham Group Limited. Synthetic β-lactam compounds, a process for their preparation and compositions containing them. 4,210,661, Cl. 424-274.000.

Popov, Vyacheslav E.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.

Porreca, Arthur J. Adjustable and knock-down picture frame construction. 4,209,922, Cl. 40-155.000.

Porter, John H., to Lad Research Industries, Inc. Differential fiber optic differential pressure sensor. 4,210,029, Cl. 73-705.000.

Potomac Applied Mechanics, Inc.: *See*—
Stubbings, James H., 4,210,090, Cl. 113-54.00R.

Pouchol, Jean-Marie, to Rhone-Poulenc Industries. Aqueous dispersions of polyvinylbutyral. 4,210,564, Cl. 260-29.60B.

Povejsil, James H., to Towmotor Corporation. Seal and seal assembly. 4,210,339, Cl. 277-153.000.

Powell, Lloyd J., to International Telephone and Telegraph Corporation. Method of making a socket contact. 4,209,895, Cl. 29-874.000.

Powers, Thomas E. Recreational vehicle. 4,210,360, Cl. 296-216.000.

PPG Industries, Inc.: *See*—
Claassen, George R., 4,210,435, Cl. 65-106.000.
Dahms, James B., 4,210,421, Cl. 23-303.000.
DeLue, Norman R.; and Crano, John C., 4,210,631, Cl. 423-292.000.
Imler, Vaughn R., 4,210,436, Cl. 65-106.000.

Prakash, Nellikunja J.: *See*—
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,664, Cl. 424-275.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,665, Cl. 424-275.000.

Praxl, Werner; and Ehret, Reiner, to Dr. Werner Freyberg Chemische Fabrik. Process for preparing pesticides releasing hydrogen phosphide. 4,210,683, Cl. 427-221.000.

Precision Monolithics, Inc.: *See*—
Fukahori, Kiyoshi, 4,210,830, Cl. 307-362.000.

Precision Thin Film Corporation: *See*—
Berg, Joseph E.; and Brown, Randolph E., Jr., 4,210,701, Cl. 428-409.000.

Preston, Frank J.; Kraus, Theodore C.; and Chandalia, Kiran B., to Olin Corporation. Graft copolymers from unsaturated monomers and peroxy di-ester polyols and polyurethanes prepared therefrom. 4,210,727, Cl. 521-137.000.

Pretty, Frederick A., to USM Corporation. Cross beam press and control. 4,210,046, Cl. 83-525.000.

Pretzer, Wayne R.: *See*—
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,606, Cl. 568-385.000.
Austin, Richard G.; Pretzer, Wayne R.; and Kobylinski, Thaddeus P., 4,210,607, Cl. 568-385.000.

Preuss, Friedrich: *See*—
Greiner, Harry; and Preuss, Friedrich, 4,210,078, Cl. 101-136.000.

Price, George M.: *See*—
Moore, L. Frank; and Price, George M., 4,210,123, Cl. 126-374.000.
Moore, L. Frank; and Price, George M., 4,210,177, Cl. 137-613.000.

Price, Kenneth E., to Rainbow Lifegard Products, Inc. Universal chlorinator module. 4,210,624, Cl. 422-264.000.

Price-Pfister Brass Mfg. Co.: *See*—
Tarnay, Matthew G.; and Krieff, Sidney K., 4,210,284, Cl. 239-75.000.

Prince Industrial Development Co., Ltd.: *See*—
Yoshinaga, Sadao, 4,209,977, Cl. 368-10.000.

Pritchard, Michael E. Portable tumbling mat. 4,210,322, Cl. 272-109.000.

Procter & Gamble Company, The: *See*—
Fleisch, Herbert A.; and Felix, Rolf, 4,210,643, Cl. 424-204.000.
Logan, Ted J.; and Underwood, David C., 4,210,594, Cl. 260-428.500.
Sarge, Henry D., III; and Spector, Alan R., 4,210,144, Cl. 128-287.000.

Producto Machinery Corporation: *See*—
McGriff, Douglas H., 4,210,184, Cl. 144-312.000.

Professional Packaging Limited: *See*—
Holmes, Gordon W., 4,210,249, Cl. 206-632.000.

Projectus Industriprodukter Aktiebolag: *See*—
Gustafsson, Berth U., 4,209,914, Cl. 34-27.000.

Prokofiev, Vladimir I.: *See*—
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Pronovost, Jacques O.; and Derderian, Harry A., to ECO Motor Industries Ltd. Wobble plate engine. 4,209,980, Cl. 60-517.000.

Pruitt, Richard L.: *See*—
Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., 4,210,086, Cl. 110-173.00A.

Prummer, Rolf: *See*—
Koppe, Werner; and Prummer, Rolf, 4,210,167, Cl. 137-375.000.

Pryor, Roger W.: *See*—
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.

Prysby, Daniel G.; Bower, Ian L.; and Huber, William B., to Bell & Howell Company. Variable format tape replay system. 4,210,940, Cl. 360-33.000.

Ptinis, Athanasios N. Magical-type game. 4,210,321, Cl. 272-8.00N.

Pugh, Timothy G.; and Shifflett, Omer L., Jr., to Black & Decker, Inc. Cordless vacuum cleaner bowl and filter system. 4,209,875, Cl. 15-344.000.

Purdue Research Foundation: *See*—
Etzel, James E.; and Keramida, Vasiliki, 4,210,530, Cl. 210-38.00B.

Purex Corporation: *See*—
McClain, Charles P.; and Yowell, Jerry E., 4,210,417, Cl. 8-137.000.

Puyau, Andre: *See*—
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, 4,210,025, Cl. 73-421.00R.

Pye, Michael R.: *See*—
Savage, Paul F.; and Pye, Michael R., 4,210,163, Cl. 132-33.00R.

Quaker Oats Company, The: *See*—
Fricano, Phillip J., 4,210,240, Cl. 206-45.310.

Quarenghi, Rodolfo, to CIR - S.p.A. - Divisione Sasib. Tobacco trimming device. 4,210,159, Cl. 131-21.00D.

Quist, Bo T.: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,210,618, Cl. 264-130.000.

R. T. French Co., The: *See*—
Bayusik, Michael J.; and Chen, Peter H., 4,210,678, Cl. 426-521.000.

Radtke, Charles S., to American Can Company. Fracture and tear-resistant retained tab. 4,210,257, Cl. 220-269.000.

Radunz, Hans-Eckart; Kramer, Josef; Baumgarth, Manfred; and Orth, Dieter, to Merck Patent Gesellschaft mit beschrankter Haftung. Thiaprostaglandins. 4,210,651, Cl. 424-263.000.

Raes, Karl. Advancing cylinder for use in a printing machine. 4,210,079, Cl. 101-242.000.

Ragan, Robert O.: *See*—
Bohme, Reinhard D.; and Ragan, Robert O., 4,210,692, Cl. 428-106.000.

Raghu, Sivaraman; and Hoffmann, Arthur K., to American Cyanamid Company. Processes for dehydrogenation of arylimidazolidones. 4,210,760, Cl. 548-320.000.

Ragulskis, Kazimiras M.: *See*—
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.

Raichvarg, Denis: *See*—
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.

Rainbow Lifegard Products, Inc.: *See*—
Price, Kenneth E., 4,210,624, Cl. 422-264.000.

Ramirez, Alberto M.: *See*—
Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.

Ramohalli, Kumar N. R.: *See*—
United States of America, National Aeronautics and Space Administration; and Ramohalli, Kumar N. R., 4,210,474, Cl. 149-19.200.

Rand, Paul K.: *See*—
James, Michael; Rand, Paul K.; and Hallworth, Gerald W., 4,210,140, Cl. 128-266.000.

Rannenberg, George C., to United Technologies Corp. Efficiency air cycle environmental control system. 4,209,993, Cl. 62-80.000.

Rapp, Herbert: *See—*
Breitschwerdt, Werner; Jahn, Walter; Rapp, Herbert; and Klein, Wilhelm, 4,210,365, Cl. 297-481.000.
Raspanti, Giuseppe, to Sandoz Ltd. Water-soluble acid addition or quaternary ammonium salts useful in eliminating or preventing the brightening effects of anionic optical brighteners. 4,210,763, Cl. 548-350.000.
Rathsack, Gunther; and Hendel, Reinhard, to Gunther Rathsack Ingenieurtechnik. Auxiliary device for vertical turning and boring machine tools. 4,209,910, Cl. 33-185.00R.
Ray, Ranjan, to Allied Chemical Corporation. Iron group transition metal-refractory metal-boron glassy alloys. 4,210,443, Cl. 75-123.00K.
Raychem Limited: *See—*
Haley, Roy; Cooper, Brian; and Changani, Pushpkumar D., 4,210,773, Cl. 174-72.00A.
Raytheon Company: *See—*
LaTorre, Richard R.; Levitt, Barry N.; and MacKenzie, Gordon C., 4,210,804, Cl. 250-203.00R.
Moskowitz, Jacob F., 4,210,874, Cl. 330-134.000.
Paterson, Malcolm M.; Paxson, William J.; and Olson, Stewart B., 4,210,527, Cl. 209-152.000.
Ream, Donald F., to United States of America, Navy. Underwater electric current and alternating magnetic field detector. 4,210,083, Cl. 102-18.00M.
Rebsamen, August: *See—*
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.
Rechter, Harold L., to Chicago Fire Brick Company. Aluminous refractory compositions containing carbon, silicon and chrome oxide. 4,210,454, Cl. 106-56.000.
Redfarn, Cyril A., to Dixon International Limited. Composition for forming an intumescent material. 4,210,725, Cl. 521-100.000.
Rees, John R., to Girling Limited. Disc brake assemblies. 4,210,229, Cl. 188-18.00A.
Regan, Ernest E.; and McCann, Thomas J., to Dowdflor Corporation. Register emboss and method. 4,210,693, Cl. 428-152.000.
Reisner, Robert J. Traction mat. 4,210,280, Cl. 238-14.000.
Relles, Howard M.; and Johnson, Donald S., to General Electric Company. Aromatic polyformal-polycarbonate block polymers and method for making same. 4,210,731, Cl. 525-469.000.
Remys, Dionizas V.; and Scott, Donald R., to Sunbeam Corporation. Clock chime with shutoff. 4,209,968, Cl. 368-273.000.
Renzel, Peter; and Vermoehlen, Werner, to Krautkramer-Branson, Incorporated. Method and apparatus for converting analog ultrasonic echo signals into digital form. 4,210,904, Cl. 340-347.0AD.
Ressmeyer, Roger H. Portable illumination source for photographers. 4,210,952, Cl. 362-17.000.
Reuss, Peter J.; and Weigl, Josef. Process for improving the dry strength of paper and for improving the effect of optical brighteners in the preparation or coating of paper. 4,210,488, Cl. 162-162.000.
Rheinmetall GmbH: *See—*
Munn, Gerhard, 4,210,059, Cl. 89-132.000.
Rheude, Alfred: *See—*
Muller, Juurgen; Rheude, Alfred; and Pfeifer, Josef, 4,210,396, Cl. 355-12.000.
Rhodes, William A. Solar desalination system. 4,210,494, Cl. 203-10.000.
Rhone-Poulenc Industries: *See—*
Pouchol, Jean-Marie, 4,210,564, Cl. 260-29.60B.
Rhone-Poulenc-Textile: *See—*
Couchoud, Paul, 4,210,740, Cl. 528-167.000.
Ricciardi, Ronald J.; Ferrara, Angelo; and Hartmann, Joseph L. Weigh feeder system. 4,210,963, Cl. 364-567.000.
Rice, Robert R.: *See—*
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., 4,210,389, Cl. 350-321.000.
Richardson, Eugene E.: *See—*
Lee, Richard J.; and Richardson, Eugene E., 4,210,545, Cl. 252-47.500.
Ricoh Company, Ltd.: *See—*
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Ridley, Richard D.: *See—*
Hutchins, Ned M.; and Ridley, Richard D., 4,210,366, Cl. 299-2.000.
Riedel, Ernest P.: *See—*
Pleasance, Lyn D.; Riedel, Ernest P.; and Weaver, Lelland A. C., 4,210,877, Cl. 331-94.5PE.
Riehl, Mark E., to General Electric Company. X-ray apparatus servo system. 4,210,815, Cl. 250-445.00R.
Rikuta, Sotokazu. Automatic controlling valve for maintaining the rate of fluid flow at a constant value. 4,210,171, Cl. 137-501.000.
Risk, George. Magnetic treatment devices for water pipelines. 4,210,535, Cl. 210-222.000.
Ritopecki, Branco. Furnace peep sight. 4,210,120, Cl. 126-200.000.
Ritter, Peter; and Fahrenkrog-Petersen, Dieter, to Siemens Aktiengesellschaft. Apparatus for housing electrical components. 4,210,951, Cl. 361-391.000.
Robbins, Ralph G.; and Bates, Victor E., to Automobile Association Limited, The. Maps. 4,210,347, Cl. 283-35.000.
Robert Bosch GmbH: *See—*
Harer, Helmut; Schulze, Rolf; and Juhasz, Josef, 4,210,855, Cl. 320-13.000.
Heitmann, Jurgen, 4,210,933, Cl. 358-172.000.
Heitmann, Jurgen; and Wilhelm, Rudolf, 4,210,938, Cl. 360-10.000.
Peter, Cornelius; and Kraus, Bernd, 4,210,016, Cl. 73-116.000.
Wessel, Wolf; and Sautter, Wilfried, 4,210,106, Cl. 123-489.000.
Roberts Corporation: *See—*
Cina, Ronald A.; and Kluge, Albert D., 4,210,194, Cl. 164-16.000.
Roberts, Lawrence R.: *See—*
Dodson, Vance H.; and Roberts, Lawrence R., 4,210,457, Cl. 106-97.000.
Roberts, Patricia M.: *See—*
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.
Roberts, Scott C., to Shell Oil Company. Process for the pyrolysis of coal in dilute- and dense-phase fluidized beds. 4,210,492, Cl. 201-12.000.
Roberts, William M.: *See—*
McStravick, David M.; and Roberts, William M., 4,210,207, Cl. 166-330.000.
Robertshaw Controls Company: *See—*
Marquis, Edgar E.; and Draghi, James A., 4,210,824, Cl. 307-141.000.
Rockwell International Corporation: *See—*
Balter, Jack S., 4,210,220, Cl. 180-70.00R.
Rockwool Aktiebolaget: *See—*
Brelen, Hans E. O.; Dahlberg, Arvid S.; and Aberg, Ulf L., 4,210,432, Cl. 65-4.00R.
Rocla Concrete Pipes Limited: *See—*
Farfor, James D.; and Gall, Huba, 4,210,009, Cl. 72-186.000.
Rodgers, James L.; and Fowler, Billy C., to Talos Systems, Inc. Method and apparatus for digitizing the location of an instrument relative to a grid. 4,210,775, Cl. 178-19.000.
Rody, Jean; Greber, Gerd; and Muller, Helmut, to Ciba-Geigy Corporation; and Sankyo Company, Limited. 4-Siloxy derivatives of polyalkylated piperidines. 4,210,578, Cl. 260-45.80N.
Rogers, Charles H.: *See—*
Amos, Lynn G.; Beechey, Charles M.; and Rogers, Charles H., 4,210,026, Cl. 73-425.600.
Rogers, William L.; Good, Paul A.; and Smith, Richard A., to Shell Oil Company. Dynamic visual display of reservoir simulator results. 4,210,964, Cl. 364-578.000.
Rohco, Inc.: *See—*
Bishop, Craig V., 4,210,500, Cl. 204-55.00Y.
Rohm and Haas Company: *See—*
Emmons, William D., 4,210,565, Cl. 260-29.6TA.
Stewart, Thomas; and Merritt, Richard F., 4,210,493, Cl. 203-8.000.
Rohrbach, Walter: *See—*
Cooke, John P.; and Rohrbach, Walter, 4,210,252, Cl. 220-4.00F.
Roland, Jack: *See—*
Eriksson, Goran, 4,210,352, Cl. 294-81.00R.
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A. Ionizing radiation generator. 4,210,813, Cl. 250-421.000.
Rosa, John; and Gyugyi, Laszlo, to Westinghouse Electric Corp. VAR Generator with current sensitive inductance break point. 4,210,860, Cl. 323-119.000.
Rosenbaum, Georges: *See—*
Vanlerberghe, Guy; and Rosenbaum, Georges, 4,210,755, Cl. 544-175.000.
Rosenhahn, Lothar: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
Rosler, Peter. Packing container for elongated objects. 4,210,253, Cl. 220-8.000.
Rossier, Marc-Henri: *See—*
Lavanchy, Gerard A.; and Rossier, Marc-Henri, 4,210,192, Cl. 164-4.000.
Rouquie, Georges, to Bertin & Cie. Machine for draining parts emerging from hot galvanizing baths. 4,210,095, Cl. 118-57.000.
Rourke, Terence A., to Domlim Inc. Process and apparatus for calcining limestone. 4,210,632, Cl. 423-637.000.
Roussel Uclaf: *See—*
Brossard, Claudine; Henry, Martine; and Raichvarg, Denis, 4,210,641, Cl. 424-180.000.
Royal Business Machines, Inc.: *See—*
Frechette, Thomas E., 4,210,296, Cl. 242-198.000.
Roza, Engel; and Voorman, Johannes O., to U.S. Philips Corporation. Delay network comprising a chain of all-pass sections. 4,210,882, Cl. 333-166.000.
Rubin, David, to United States of America, Navy. Millimeter wave microstrip triplexer. 4,210,881, Cl. 333-110.000.
Rubinstein, Arthur: *See—*
Cinque, Gregory M.; Pryor, Roger W.; and Rubinstein, Arthur, 4,210,936, Cl. 358-283.000.
Rudolph, Frank W.: *See—*
Mead, Ralph T.; Frenz, Norbert W., Jr.; Rudolph, Frank W.; and Greatbatch, Wilson, 4,210,708, Cl. 429-181.000.
Ruegger, Artur; and Kuhn, Max, to Sandoz Ltd. Organic compounds. 4,210,581, Cl. 260-112.50R.
Ruger, Roderich, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Heat imaging apparatus. 4,210,807, Cl. 250-330.000.
Ruhle, Martin, to Mahle GmbH. Method of producing an aluminum-silicon casting. 4,210,193, Cl. 164-4.000.
Runciman, Herbert M.: *See—*
Berry, Peter J.; and Runciman, Herbert M., 4,210,810, Cl. 250-347.000.

Ruscheinsky, Emil: *See*—
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.
Russell, John H.: *See*—
Lawrance, Richard J.; and Russell, John H., 4,210,512, Cl. 204-257.000.
Ruzek, Ivo: *See*—
Hartmann, Ludwig; and Ruzek, Ivo, 4,210,690, Cl. 428-95.000.
Ryan, Leo F.: *See*—
Butterworth, Donald J.; and Ryan, Leo F., 4,210,537, Cl. 210-323.00T.
Ryer, Jack: *See*—
Feldman, Nicholas; Ryer, Jack; and Dooley, Martin F., 4,210,424, Cl. 44-62.000.
S&C Electric Company: *See*—
Stranczek, Norman J., 4,210,788, Cl. 200-42.00T.
Sabourin, Edward T.; and Selwitz, Charles M., to Gulf Research and Development Company. Process for the preparation of chloroarylacetylene precursors. 4,210,610, Cl. 260-649.00R.
Sach, George S.: *See*—
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.
Sado, Ryoichi; and Nakamura, Akio, to Shin-Etsu Polymer Co., Ltd. Pressure sensitive resistor elements. 4,210,895, Cl. 338-99.000.
Sadovnik, Isaac: *See*—
Mitman, Enrique; and Sadovnik, Isaac, 4,210,041, Cl. 83-32.000.
Saeki, Yoshito: *See*—
Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, 4,210,640, Cl. 424-181.000.
Saft-Societe des Accumulateurs Fixes et de Traction: *See*—
Godard, Pierre, 4,210,854, Cl. 320-10.000.
Saint-Gobain Industries: *See*—
Fromaget, Georges, 4,210,293, Cl. 242-18.00A.
Paulus, Helmut, 4,210,050, Cl. 83-848.000.
St. Regis Paper Company: *See*—
Wilharm, Fred B., 4,210,480, Cl. 156-308.400.
Saito, Katsuhide: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Saito, Toshihisa: *See*—
Ishiguro, Yasuo; Wakazono, Kenji; and Saito, Toshihisa, 4,210,393, Cl. 354-23.00D.
Sakai, Toshiyasu, to Nippondenso Co., Ltd. Bar code scanner. 4,210,802, Cl. 235-483.000.
Sakakibara, Yasuyuki, to Nippon Soken, Inc. Two-dimensional display apparatus for an automobile. 4,210,908, Cl. 340-754.000.
Sakamoto, Hitoshi: *See*—
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
Sakamoto, Koji: *See*—
Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, to Sumitomo Metal Industries, Ltd. Method and apparatus for measuring slag foaming using microwave lever meter. 4,210,023, Cl. 73-290.00R.
Sakovich, Michael M.: *See*—
Sequin, Maurice, 4,210,272, Cl. 229-7.00R.
Sakurai, Sadaaki; and Suwa, Hisashi, to Sony Corporation. Loudspeaker system with heat pipe. 4,210,778, Cl. 179-1.00E.
Saligny, Yves, to Etablissements Carpano & Pons. Connecting unit for dispatchers systems. 4,210,375, Cl. 339-14.00L.
Salov, Viktor P.: *See*—
Kononov, Ivan V.; Makushin, Mikhail P.; Polukhin, Dmitry I.; Popov, Vyacheslav E.; Salov, Viktor P.; Bocharov, Jury A.; Golovin, Vasily Y.; Mirskaya, Natalya M.; Cherny, Stanislav I.; and Yakovenko, Ivan F., 4,209,987, Cl. 60-413.000.
Salzer, Erwin, to Gould Inc. Electric fuse having helically wound fusible elements. 4,210,892, Cl. 337-161.000.
Samejima, Toshihide: *See*—
Moritani, Nakanobu; Samejima, Toshihide; Matsumura, Toshio; Oda, Hajime; and Fujita, Masanori, 4,209,975, Cl. 368-186.000.
Sanders Associates, Inc.: *See*—
Misek, Victor A., 4,210,400, Cl. 356-359.000.
Sandoz, Inc.: *See*—
Houlihan, William J., 4,210,585, Cl. 260-245.600.
Sandoz Ltd.: *See*—
Mauric, Claudine; and Wolf, Rainer, 4,210,451, Cl. 106-18.170.
Raspanti, Giuseppe, 4,210,763, Cl. 548-350.000.
Ruegger, Artur; and Kuhn, Max, 4,210,581, Cl. 260-112.50R.
Sangamo Weston, Inc.: *See*—
Dyer, Robert E., 4,210,937, Cl. 360-6.000.
Sankyo Company, Limited: *See*—
Rody, Jean; Greber, Gerd; and Muller, Helmut, 4,210,578, Cl. 260-45.80N.
Sanyo Electric Co., Ltd.: *See*—
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, 4,210,781, Cl. 179-15.55T.
Sarantakis, Dimitrios: *See*—
Lien, Eric L.; Sarantakis, Dimitrios; and Grant, Norman H., 4,210,636, Cl. 424-177.000.
Sarge, Henry D., III; and Spector, Alan R., to Procter & Gamble Company, The. Disposable diaper having refastenable tape system. 4,210,144, Cl. 128-287.000.
Sarges, Reinhard; Belletire, John L.; and Schnur, Rodney C., to Pfizer Inc. Pharmaceutical preparations containing coumarin carboxylic acid derivatives. 4,210,667, Cl. 424-281.000.
Sarges, Reinhard, to Pfizer Inc. Tetrahydroquinoline hydantoins for chronic diabetic complications. 4,210,756, Cl. 546-15.000.
Sasson, Azra: *See*—
Whitlow, Duane L.; and Sasson, Azra, 4,210,961, Cl. 364-300.000.
Sato, Akihiko; and Goto, Tetsuro, to Nippon Kogaku K.K. Shutter time temperature compensating device in a camera. 4,210,394, Cl. 354-234.000.
Sato, Hiroshi: *See*—
Kojima, Ichiro; Sato, Hiroshi; and Fujiwara, Yasuo, 4,210,720, Cl. 435-42.000.
Sato, Hisatake: *See*—
Hayashi, Hideo; and Sato, Hisatake, 4,210,733, Cl. 525-529.000.
Sato, Kenichi: *See*—
Nishimura, Satoshi; Sato, Kenichi; and Sugiura, Youji, 4,210,781, Cl. 179-15.55T.
Sato, Yo, to Kabushiki Kaisha Sato. Pressure sensitive label strip for use in a label printing machine. 4,210,688, Cl. 428-41.000.
Saunders, George D. Sectional multi-purpose cargo container. 4,209,887, Cl. 29-240.000.
Sautter, Wilfried: *See*—
Wessel, Wolf; and Sautter, Wilfried, 4,210,106, Cl. 123-489.000.
Savage, Paul F.; and Pye, Michael R., to Gillette Company, The. Hair roller device. 4,210,163, Cl. 132-33.00R.
Saveliev, Valentin P.: *See*—
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Savitskas, Ionas A.: *See*—
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D., 4,210,837, Cl. 310-323.000.
Sawada, Shuzo: *See*—
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.
Scantlin, William M.; and Clemens, Lawrence M., to Minnesota Mining and Manufacturing Company. Polyester-film backed magnetic recording tape having epoxy subbing layer. 4,210,703, Cl. 428-413.000.
Scemama, Patrick: *See*—
Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.
Schaefer, Harold W., to National Union Electric Corporation. Brush-beater for a vacuum cleaner and method for making the same. 4,209,873, Cl. 15-182.000.
Schechter, Paul J.: *See*—
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,664, Cl. 424-275.000.
Giroux, Eugene L.; Prakash, Nellikunja J.; and Schechter, Paul J., 4,210,665, Cl. 424-275.000.
Scheid, Lloyd J. Panel construction having lateral edge members. 4,209,954, Cl. 52-601.000.
Scheid, Norman W.: *See*—
Daniels, Raymond R.; and Scheid, Norman W., 4,210,175, Cl. 137-564.500.
Schenker, Karl; and Bernasconi, Raymond, to Ciba-Geigy Corporation. Anti-depressant benzofuranyl piperidines. 4,210,655, Cl. 424-267.000.
Schilling, William F.; and Beltran, Adrian M., to General Electric Company. Method for diffusion bonding sheet claddings to superalloy substrates. 4,210,269, Cl. 228-193.000.
Schimmel, Vernon R., to Symons Corporation. Safety key and locking means therefor for use with concrete wall form panels. 4,210,306, Cl. 249-196.000.
Schinke, David P.: *See*—
North, James C.; and Schinke, David P., 4,210,923, Cl. 357-30.000.
Schlesinger, Sheldon I.; and Cochran, Veronica, to American Can Company. Radiation sensitive composition comprising copolymer of glycidyl methacrylate and allyl glycidyl ether and diazonium salt of complex halogenide. 4,210,449, Cl. 430-183.000.
Schloemann-Siemag Aktiengesellschaft: *See*—
Bretschneider, Erich; Leitner, Hermann; and Bohmer, Friedhelm, 4,210,011, Cl. 72-234.000.
Eckardt, Helmut; and Ehritt, Jurgen, 4,210,616, Cl. 264-45.100.
Jansen, Johannes, 4,210,294, Cl. 242-72.100.
Schlumberger Technology Corp.: *See*—
Ingram, John D., 4,210,965, Cl. 367-26.000.
Ingram, John D., 4,210,966, Cl. 367-27.000.
Ingram, John D., 4,210,967, Cl. 367-34.000.
Schlussel, Peter: *See*—
Fehlau, Robert; Schlussel, Peter; and Schneider, Matthias, 4,210,153, Cl. 128-637.000.
Schmid, Reinhold, to W. Schlafhorst & Co. Lifting or pressing device. 4,210,031, Cl. 74-89.210.
Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH. Process for determining the effective doping agent content of hydrogen for the production of semiconductors. 4,210,486, Cl. 156-601.000.
Schmidt, Gunther; and Leitold, Matyas, to Boehringer Ingelheim GmbH. II-Aminoacyl-5,11-dihydro-6H-pyrido(2,3-B) (1,4)benzodiazepin-6-ones and salts thereof. 4,210,648, Cl. 424-256.000.
Schmitt, Frederick L., to International Flavors & Fragrances Inc. Fragrance compositions containing 3-methyl-1-phenyl-pentanol-5 or

specific optical isomers thereof and one or more butanoyl cyclohexane derivatives. 4,210,554, Cl. 252-174.110.
Schmitt, Frederick L.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.
Schneider, Jurg; and Fattinger, Volker, to Ciba-Geigy Corporation. Gas scrubbing plant and baffles therefor. 4,210,428, Cl. 55-223.000.
Schneider, Matthias: *See*—
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Schnur, Rodney C.: *See*—
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Schoettle, Klaus; Dobler, Peter; Gliniorz, Lothar; Gaiser, Dieter; and Lewin, Helmut, to BASF Aktiengesellschaft. Device for ejecting a loop of leader tape from a magnetic tape cassette. 4,210,266, Cl. 226-97.000.
Schoxi AG, Firma: *See*—
Meili, Rene, 4,210,679, Cl. 426-564.000.
Schrecker, H. Dale, to Aluminum Company of America. Barrier coated metallic container wall and sheet. 4,210,259, Cl. 220-455.000.
Schroder, Herbert; and Schroder, Reinhard. Apparatus for dividing and kneading a piece of dough. 4,210,402, Cl. 366-76.000.
Schroder, Reinhard: *See*—
Schroder, Herbert; and Schroder, Reinhard, 4,210,402, Cl. 366-76.000.
Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Abrasion resistant silicone coated polycarbonate article. 4,210,699, Cl. 428-331.000.
Schubert, Steven M. Racket-mounted tennis ball retriever. 4,210,327, Cl. 273-73.00R.
Schuessler, Charles J.: *See*—
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Schulman, Bernard L., to Tosco Corporation. Method and apparatus for retorting a substance containing organic matter. 4,210,491, Cl. 201-2.500.
Schulze, Rolf: *See*—
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Schumann, Klaus: *See*—
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Schurig, Helmut: *See*—
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Schutt, Wolfgang: *See*—
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Schutz, Hans-Ulrich: *See*—
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Schwan, Thomas J., to Morton-Norwich Products, Inc. 1-(4-Chlorophenyl)-3-(2,2-diethoxyethyl)-2-imidazolidinone. 4,210,761, Cl. 548-320.000.
Schwander, Hansrudolf: *See*—
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Schwartz, Robert C.: *See*—
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Schwuger, Milan J.: *See*—
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Sciulli, Francis J.: *See*—
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Scott, Donald R.: *See*—
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Scott Paper Company: *See*—
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Sea Solar Power: *See*—
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Sebring, Robert E.: *See*—
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Sedco, Inc.: *See*—
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Seiden, Frederick C.: *See*—
Meyers, George L.; Seiden, Frederick C.; and Waller, Lonnie J., 4,210,069, Cl. 93-36.00M.
Seidenberger, James W., to J. T. Baker Chemical Company. Spill control composition and use thereof. 4,210,460, Cl. 134-7.000.
Seikenkai: *See*—
Hata, Kosei, 4,210,672, Cl. 426-43.000.
Seiko Koki Kabushiki Kaisha: *See*—
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.
Kitai, Kiyoshi; and Ishida, Hiroaki, 4,210,395, Cl. 354-234.000.
Seitz, Robert F., to Youngstown Steel Door Company, The. Power wheel for folding doors. 4,210,231, Cl. 192-8.00R.
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Selwitz, Charles M.: *See*—
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Semersky, Frank E.: *See*—
Breno, Philip J.; Clark, Robert N.; and Semersky, Frank E., 4,210,623, Cl. 422-101.000.
Semiconductor Circuits, Inc.: *See*—
LaBrie, Paul J., 4,210,903, Cl. 340-347.0NT.
Sempuku, Kenji: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Sempuku, Kenji; Kitaguchi, Koji; Fujita, Yukio; Yoshikuni, Yoshiaki; Kura, Kohei; Saito, Katsuhide; Mori, Tamiki; and Yasutomi, Yasuo, 4,210,671, Cl. 424-324.000.
Sequin, Carlo H.: *See*—
Crochiere, Ronald E.; Sequin, Carlo H.; and Tompsett, Michael F., 4,210,825, Cl. 307-221.00D.
Sequin, Maurice, to Sakovich, Michael M. Container lid. 4,210,272, Cl. 229-7.00R.
Seragnoli, Enzo, to G.P. Societa per Azichi. Device for feeding and checking layers of cigarettes in cigarette packaging machines. 4,209,955, Cl. 53-54.000.
Serber, Stephen L.: *See*—
Mueller, Dale A.; and Serber, Stephen L., 4,209,994, Cl. 62-155.000.
Serkez, Alvin A. Handbag holder. 4,210,302, Cl. 248-308.000.
Settineri, William J.: *See*—
Frenier, Wayne W.; and Settineri, William J., 4,210,552, Cl. 252-151.000.
Seward, Thomas P., III: *See*—
Araujo, Roger J.; Borrelli, Nicholas F.; Crow, John D.; and Seward, Thomas P., III, 4,210,386, Cl. 350-96.310.
Seymour Manufacturing Co., Inc.: *See*—
Hobson, Willis S.; and Graber, Elmer A., 4,210,348, Cl. 285-1.000.
Shaffer, Donald J. Tuneable intake manifold. 4,210,107, Cl. 123-52.00M.
Shah, Manhar L.; and Hunt, William D., to Harris Corporation. Technique for widening the temperature range of surface acoustic wave reflection array filters. 4,210,883, Cl. 333-195.000.
Shanin, Steven R. Puzzle device including polyhedrons and support structure therefor. 4,210,332, Cl. 273-157.00R.
Shanin, Steven R. Puzzle cubes for forming rectangular parallelepipeds. 4,210,333, Cl. 273-157.00R.
Shanks, Forrest E., to Sedco, Inc. Subsea choke and riser pressure equalization system. 4,210,208, Cl. 166-352.000.
Shannon, John M., to U.S. Philips Corporation. Charge coupled imaging device having selective wavelength sensitivity. 4,210,922, Cl. 357-24.000.
Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., to United States of America, Navy. Electric wind generator. 4,210,847, Cl. 315-111.900.
Shannon, William M.: *See*—
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Sharp Kabushiki Kaisha: *See*—
Aiba, Masahiko, 4,210,919, Cl. 346-75.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,907, Cl. 340-785.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.
Oguri, Ichiro, 4,210,794, Cl. 219-10.55F.
Suzuki, Chuji; Ise, Masahiro; Inazaki, Kenzo; and Machino, Katsuyuki, 4,210,848, Cl. 315-169.300.
Sharpe, Louis H.: *See*—
Chandross, Edwin A.; and Sharpe, Louis H., 4,210,704, Cl. 428-414.000.
Shavit, Gideon, to Honeywell Inc. Surface acoustic wave code reader. 4,210,900, Cl. 340-149.00R.
Shaw, David N., to Dunham-Bush, Inc. Reciprocating compressor refrigeration system using step expansion and auto staging. 4,209,996, Cl. 62-175.000.
Shaw, David N., to Dunham-Bush, Inc. Air source heat pump with displacement doubling through multiple slide rotary screw compressor/expander unit. 4,209,998, Cl. 62-324.000.
Shaymar, Inc.: *See*—
Phillips, William W., 4,210,784, Cl. 179-146.00H.
Shell Internationale Research Maatschappij B.V.: *See*—
Harrison, David V.; Weaver, Roy; and Wilson, Henry G. E., 4,210,098, Cl. 118-317.000.
Shell Oil Company: *See*—
Roberts, Scott C., 4,210,492, Cl. 201-12.000.
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.
Titus, Paul E., 4,210,422, Cl. 44-15.00R.
Verloop, Jan; and Braam, Johannes W. T. M., 4,210,627, Cl. 423-220.000.
Sheller-Globe Corporation: *See*—
Korbell, George K., 4,210,857, Cl. 322-28.000.

Shelley, Samuel P.: *See—*
Doucette, Edward I.; and Shelley, Samuel P., 4,210,199, Cl. 165-70.000.

Shelton, Garland T., Jr., to Shelton and Ostrowski Incorporated. Gravity flow hydraulic device. 4,209,990, Cl. 60-640.000.

Shelton and Ostrowski Incorporated: *See—*
Shelton, Garland T., Jr., 4,209,990, Cl. 60-640.000.

Shepard, Richard W.: *See—*
Sqrillo, John J.; and Shepard, Richard W., 4,210,003, Cl. 66-116.000.

Sherrow, Lionel: *See—*
Hofstaedter, Gerard F.; and Sherrow, Lionel, 4,209,892, Cl. 29-469.000.

Sherry, Dorothy: *See—*
Spann, Donald C.; and Sherry, Dorothy, 4,210,317, Cl. 269-328.000.

Shetty, Bola V., to Pennwalt Corporation. Substituted 1,2,4,5-tetrahydro-3H,3 benzazepines. 4,210,749, Cl. 542-469.000.

Shiban, Samir S. Water screen. 4,210,539, Cl. 210-391.000.

Shibata, Akira: *See—*
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, 4,210,942, Cl. 360-65.000.

Shibata, Toshihiro: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; Kubota, Naohiro; and Shibata, Toshihiro, 4,210,577, Cl. 260-45.8NT.

Shida, Masaharu: *See—*
Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, 4,209,971, Cl. 368-76.000.

Shifflett, Omer L., Jr.: *See—*
Pugh, Timothy G.; and Shifflett, Omer L., Jr., 4,209,875, Cl. 15-344.000.

Shimada, Shoji; Yoshinari, Kazuhiko; and Koyakumaru, Hidefumi, to Nippon Steel Corp. Process of annealing for preventing temper colors on a steel sheet. 4,210,469, Cl. 148-16.000.

Shimoda, Haruo: *See—*
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, 4,210,473, Cl. 148-189.000.

Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Prostanoic acid derivatives. 4,210,669, Cl. 424-305.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi; and Nakamura, Akio, 4,210,895, Cl. 338-99.000.

Shinohara, Toshio: *See—*
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.

Shinozaki, Fumiaki: *See—*
Kitajima, Masao; Tachikawa, Hiromichi; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,210,711, Cl. 430-253.000.

Shinozaki, Nobuo: *See—*
Kitai, Kiyoshi; Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,209,969, Cl. 368-250.000.

Shinto Paint Co., Ltd.: *See—*
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.

Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automotive suspension system. 4,210,343, Cl. 280-668.000.

Shirakawa, Norio: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.

Shirasawa, Toshikatsu: *See—*
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, 4,210,464, Cl. 148-1.500.

Shoney, Suryakant R., to International Paper Company. Method of making a catheter. 4,210,478, Cl. 156-242.000.

Shriver, Frank L., to Coors Container Company. Protective coating for cans and methods for application of coating thereto. 4,210,684, Cl. 427-286.000.

Shukla, Jayendra G.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.

Sidelman, Abraham, to H. Goodman & Sons, Inc. Self-holding hair rollers. 4,210,164, Cl. 132-40.000.

Siegfried Aktiengesellschaft: *See—*
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.

Sielemann, Hans. Grinding machine. 4,209,950, Cl. 51-267.000.

Siemens Aktiengesellschaft: *See—*
Ewe, Kurt; and Linzenkirchner, Edmund, 4,210,853, Cl. 318-630.000.
Fleer, Ernst O., 4,209,908, Cl. 433-78.000.
Hacke, Hans J., 4,210,926, Cl. 357-70.000.
Koslar, Manfred, 4,210,862, Cl. 324-51.000.
Ritter, Peter; and Fahrenkrog-Petersen, Dieter, 4,210,951, Cl. 361-391.000.
Sutor, Norbert; and Vogelsberg, Dieter, 4,209,966, Cl. 57-6.000.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Deutschlander, Gert; Rebsamen, August; and Fluck, Rene, 4,209,960, Cl. 53-502.000.

Silva, Joseph W.; and Duffield, Albert J., to Olin Corporation. Corrosion resistant fastening system and method. 4,209,889, Cl. 29-432.000.

Silver, Spencer F., to Minnesota Mining and Manufacturing Company. Protein immobilizer. 4,210,722, Cl. 435-176.000.

Simic, Militun, to Chevron Research Company. Plasticized sulfur with improved thixotropy. 4,210,458, Cl. 106-287.230.

Simokat, Frank L., to TII Corporation. Amplitude modulated telephone carrier system and terminal equipment therefor. 4,210,779, Cl. 179-2.510.

Simons, Harold M.: *See—*
Campbell, Barrie C.; and Simons, Harold M., 4,210,511, Cl. 204-256.000.

Sims, James O. Valve. 4,210,308, Cl. 251-31.000.

Sir James Farmer Norton & Co. Limited: *See—*
Thorpe, Alfred, 4,210,006, Cl. 68-205.00R.

Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G. Apparatus for continuous enamelling of tubes. 4,210,096, Cl. 118-58.000.

Skalka, Paul: *See—*
Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., 4,210,887, Cl. 335-6.000.

Skarstad, Paul M., to Medtronic, Inc. Cathode materials for electrochemical cells. 4,210,706, Cl. 429-105.000.

SKF Compagnie d'Applications Mechaniques: *See—*
Guerton, Jean P.; Waleckx, Jean; and Monville, Jean M., 4,209,967, Cl. 57-58.720.

Sklar, Paul R. Flying saucer appendage. 4,209,936, Cl. 46-74.00D.

Smith, David A.: *See—*
Davidson, John J.; and Smith, David A., 4,210,507, Cl. 204-181.00R.

Smith, Gerald L.: *See—*
Ford, Leland W.; Ramirez, Alberto M.; and Smith, Gerald L., 4,210,858, Cl. 323-22.00T.

Smith, Homer, Jr.; Pruitt, Richard L.; Barnum, Edward F.; and Knerr, Robert P., Jr., to Inland Steel Company. Cover for soaking pits and the like. 4,210,086, Cl. 110-173.00A.

Smith International, Inc.: *See—*
Garner, Lloyd L., 4,210,270, Cl. 228-103.000.

Smith, Jennings T.; and LeBaron, George L. Transient suppression and detection system with operational indicator means. 4,210,906, Cl. 340-659.000.

Smith, Ken P.: *See—*
Kershner, Stuart D.; and Smith, Ken P., 4,210,307, Cl. 249-202.000.

Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,210,652, Cl. 424-263.000.
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,210,658, Cl. 424-273.00R.

Smith, Ray E.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.

Smith, Richard A.: *See—*
Rogers, William L.; Good, Paul A.; and Smith, Richard A., 4,210,964, Cl. 364-578.000.

Smith, Richard J.: *See—*
Lysenko, George P.; and Smith, Richard J., 4,210,350, Cl. 292-86.000.

Smith, Robert L.: *See—*
Gorring, Robert L.; and Smith, Robert L., 4,210,521, Cl. 208-89.000.

Smitherman, Ray C. Pole mounted weed killer dispenser. 4,210,286, Cl. 239-302.000.

SmithKline Corporation: *See—*
Berges, David A., 4,210,587, Cl. 548-251.000.

Smolka, Heinz G.: *See—*
Plapper, Juergen; Schwuger, Milan J.; Smolka, Heinz G.; Schumann, Klaus; Arndt, Emanuel; and Ruscheinsky, Emil, 4,210,416, Cl. 8-139.100.

Smolnikov, Nikolai V.: *See—*
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.

Snamprogetti, S.p.A.: *See—*
Zardi, Umberto, 4,210,600, Cl. 260-555.00A.

Snover, John A.; and Caines, R. Scott, to Dow Chemical Company, The. Method of applying vermicular expanded graphite composite material. 4,210,621, Cl. 264-516.000.

Societe Anonyme Automobiles Citroen: *See—*
Dore, Jacques P., 4,210,002, Cl. 64-32.00F.

Societe Anonyme DBA: *See—*
Courbot, Pierre, 4,210,233, Cl. 192-89.00B.

Societe Anonyme de Telecommunications: *See—*
Baudot, Jean-Jacques, 4,210,385, Cl. 350-16.000.

Societe Anonyme dite: Consortium General Textile: *See—*
De Jonckheere, Raphael, 4,210,143, Cl. 128-287.000.

Societe Anonyme Francaise du Ferodo: *See—*
Beccaris, Carlo, 4,210,232, Cl. 192-48.800.
Neveux, Rene R., 4,210,833, Cl. 310-58.000.
Neveux, Rene R., 4,210,835, Cl. 310-62.000.

Societe Anonyme Pipe Line Service: *See—*
Euzen, Jean-Paul; and Scemama, Patrick, 4,210,015, Cl. 73-61.10R.

Societe Chimique des Charbonnages-CdF Chimie: *See—*
Machon, Jean P., 4,210,734, Cl. 526-65.000.

Societe de Prospection et d'Inventions Techniques, S.P.I.T.: *See—*
Combette, Marc; and Ollivier, Jean, 4,210,267, Cl. 227-10.000.

Societe d'Exploitation de Brevets J.B.: *See—*
Hancu, Theodore, 4,209,874, Cl. 15-250.320.

Societe Nationale des Poudres et Explosifs: *See*—
Piteau, Marc D.; and Malfroot, Thierry A., 4,210,598, Cl. 260-455.00B.
Societe Nationale Elf Aquitaine (Production): *See*—
Bimond, Jean-Pierre; Lazarre, Flavien; and Puyau, Andre, 4,210,025, Cl. 73-421.00R.
Societe Nouvelle des Acieries de Pompey: *See*—
Bellot, Jean, 4,210,444, Cl. 75-124.000.
Soderstrom, Melvin A.: *See*—
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., 4,210,379, Cl. 339-101.000.
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, to Olympus Optical Co., Ltd. Apparatus for liquid disposal and distribution in automatic culture system. 4,210,724, Cl. 435-292.000.
Sokol, Benjamin. Internal electric explosion engine. 4,209,983, Cl. 60-325.000.
Solardyne, Inc.: *See*—
Fender, William H., 4,210,125, Cl. 126-437.000.
Solarspan, Inc.: *See*—
Mattson, John P., 4,210,128, Cl. 126-444.000.
Solex Research Corporation of Japan: *See*—
Watanabe, Morio; and Nishimura, Sanji, 4,210,502, Cl. 204-151.000.
Solvay & Cie.: *See*—
Baekelmans, Paul; and Bernard, Albert, 4,210,736, Cl. 526-142.000.
Hermans, Jean P.; and Henrioulle, Paul, 4,210,738, Cl. 526-152.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,729, Cl. 525-247.000.
Hermans, Jean-Pierre; and Henrioulle, Paul, 4,210,735, Cl. 526-119.000.
Somlo, Tibor; and Hungerbuhler, Anton, to Ciba-Geigy Corporation. Process for producing 2-halo-4-bromophenols. 4,210,766, Cl. 568-779.000.
Sommer, Friedhelm: *See*—
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
Sontheimer, Georg, to BVT Beratungs-, Verwaltungs- und Treuhandgesellschaft mbH. Tractor-trailer air-brake system. 4,210,368, Cl. 303-3.000.
Sony Corporation: *See*—
Iwasaki, Shun-Ichi; and Nakamura, Yoshihisa, 4,210,946, Cl. 360-131.000.
Kanazawa, Kenichi; and Tanaka, Yukio, 4,210,827, Cl. 307-264.000.
Koizumi, Akio, 4,210,947, Cl. 361-18.000.
Kutaragi, Ken, 4,210,934, Cl. 358-241.000.
Nakamura, Tadahiko; and Nakano, Kenji, 4,210,943, Cl. 360-70.000.
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
Ohmori, Masayuki; and Ito, Norio, 4,210,928, Cl. 358-60.000.
Sakurai, Sadaaki; and Suwa, Hisashi, 4,210,778, Cl. 179-1.00E.
Suzuki, Tadao; and Kawada, Hirohito, 4,210,873, Cl. 330-51.000.
Takabayashi, Kazuhiko, 4,210,929, Cl. 358-64.000.
Wakamiya, Tadamitsu, 4,210,851, Cl. 318-257.000.
Soothill, John F.; and Levinsky, Roland J., to National Research Development Corporation. Kit for assay of immune complexes. 4,210,622, Cl. 422-61.000.
Sorenson, Richard W., to Carlingswitch, Inc. Slide switch. 4,210,791, Cl. 200-164.00R.
Sorsa, Erkki; Haukkovaara, Esko; and Fors, Jan, to Kemira Oy. Process for the preparation of viscose. 4,210,747, Cl. 536-60.000.
Southgate, Robert: *See*—
Ponsford, Roger J.; Southgate, Robert; and Roberts, Patricia M., 4,210,661, Cl. 424-274.000.
Southwest Research Institute: *See*—
Dimitroff, Edward; and Vitkovits, John A., 4,210,103, Cl. 123-1.00A.
Space Age Electronics Limited: *See*—
Toubkin, Walter M.; and Mulley, Alan J., 4,210,970, Cl. 367-109.000.
Spanjer Brothers, Inc.: *See*—
Donatelle, Leo P., 4,209,927, Cl. 40-607.000.
Spann, Donald C.; and Sherry, Dorothy. Apparatus for supporting and positioning the arm and shoulder. 4,210,317, Cl. 269-328.000.
Sparks, John E.: *See*—
Jackson, Richard E.; Schwartz, Robert C.; and Sparks, John E., 4,210,075, Cl. 100-35.000.
Spears, Gary D.: *See*—
Magana, Cecil L.; and Spears, Gary D., 4,210,772, Cl. 174-59.000.
Specific Volume Systems, Inc.: *See*—
Patterson, James A., 4,210,027, Cl. 73-432.00R.
Spector, Alan R.: *See*—
Sarge, Henry D., III; and Spector, Alan R., 4,210,144, Cl. 128-287.000.
Sperry Corporation: *See*—
Borgerson, Barry R.; Tjaden, Garold S.; and Hanson, Merlin L., 4,210,960, Cl. 364-200.000.
Spethmann, Donald H., to Honeywell Inc. Operating optimization for plural parallel connected chillers. 4,210,957, Cl. 364-105.000.
Sphere Investments Limited: *See*—
Stone, Alan M., 4,210,311, Cl. 251-129.000.
Spira, Joel S.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,210,846, Cl. 315-121.000.
Spisak, Edward G. Wheel trim assembly. 4,210,367, Cl. 301-37.00R.
Sqrillo, John J.; and Shepard, Richard W., to Torrington Company, The. Knitting needle with reinforced hook. 4,210,003, Cl. 66-116.000.
Sridhar, Srinivasan, to Chemische Werke Huls Aktiengesellschaft. Process for recovering propene and propene/propane mixtures from the off-gases from the hydroformylation of propene. 4,210,426, Cl. 55-68.000.
Staats, Clyde; and Pilewski, John J., to Staats & Staats, Inc. Method and apparatus for high precision lapping machines. 4,209,949, Cl. 51-151.000.
Staats & Staats, Inc.: *See*—
Staats, Clyde; and Pilewski, John J., 4,209,949, Cl. 51-151.000.
Staendeke, Horst: *See*—
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to Boehringer Ingelheim GmbH. Substituted 7-phenyl-2,3-dihydro-imidazo[1,2-α]imidazoles and salts thereof. 4,210,659, Cl. 424-273.00R.
Stahlwerke Peine-Salzgitter Aktiengesellschaft: *See*—
Vlad, Constantin; and Paulitsch, Hans, 4,210,010, Cl. 72-201.000.
Standard Keil Hardware Manufacturing Co.: *See*—
Cook, Sanford L.; and Villa, Joseph N., 4,210,349, Cl. 292-78.000.
Standard Manufacturing Co., Inc.: *See*—
Oswald, Norman D.; and Mankey, Harry S., 4,210,218, Cl. 180-24.120.
Oswald, Norman D.; and Mankey, Harry S., 4,210,219, Cl. 180-24.120.
Standard Oil Company (Indiana): *See*—
Ginsburgh, Irwin; and McCollum, John D., 4,210,867, Cl. 324-323.000.
Ginsburgh, Irwin; and McCollum, John D., 4,210,868, Cl. 324-323.000.
Lee, Richard J.; and Richardson, Eugene E., 4,210,545, Cl. 252-47.500.
Melquist, John L.; Kildahl, Nicholas K.; and Fotis, Peter, 4,210,559, Cl. 252-431.00R.
Windgassen, Richard J.; and Ott, Louis E., 4,210,437, Cl. 71-28.000.
Stanley Tools Limited: *See*—
Gilbert, Richard, 4,209,900, Cl. 30-162.000.
Staodynamics, Inc.: *See*—
James, Donald N., 4,210,150, Cl. 128-421.000.
Stark, Virgil. Solar energy collection. 4,210,121, Cl. 126-424.000.
Staubli, Peter E. Rider clip with offset retention flaps and retention bar for denture. 4,209,904, Cl. 433-177.000.
Stauffer Chemical Company: *See*—
Gallagher, Ruth E.; Goswami, Jagadish C.; Kraft, Paul; and Yu, Arthur J., 4,210,739, Cl. 526-325.000.
Teach, Eugene G., 4,210,589, Cl. 260-326.5FL.
Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanidue S.A.: *See*—
Utzmann, Rene, 4,209,957, Cl. 53-453.000.
Steadman, Howard L.: *See*—
Marsh, James P.; and Steadman, Howard L., 4,210,962, Cl. 364-402.000.
Stefancik, Nikolaus: *See*—
Galow, Manfred; and Stefancik, Nikolaus, 4,210,430, Cl. 55-344.000.
Steiger, Klaus; and Wahl, Peter, to Loewe-Opta GmbH. Videogame with mechanically disjoint target detector. 4,210,329, Cl. 273-313.000.
Steinbach, James G.: *See*—
Jackson, William W.; Steinbach, James G.; and Geiger, Lon R., 4,210,212, Cl. 172-645.000.
Steinlein, Rudolf F., to Alexander Schoeller & Co. AG. Molded case for returnable beverage bottles. 4,210,265, Cl. 224-48.00A.
Stepanov, Boris M.: *See*—
Romanovsky, Vladimir F.; Panasjuk, Vadim S.; Stepanov, Boris M.; Ovcharov, Alexandr M.; and Akimov, Jury A., 4,210,813, Cl. 250-421.000.
Stephens, Ruth E., to Ethyl Corporation. Process for preparing filled polyvinyl chloride compositions. 4,210,574, Cl. 260-42.160.
Stevenson Industries: *See*—
Donnelley, James R., 4,209,961, Cl. 53-588.000.
Stewart, Thomas; and Merritt, Richard F., to Rohm and Haas Company. C-Nitroso compounds as anaerobic polymerization inhibitors for acrylic acid or methacrylic acid. 4,210,493, Cl. 203-8.000.
Stievenart, Emile F.; Plessers, Hendrik S.; and Neujens, Georges J., to AGFA-GEVAERT N.V. Apparatus for unloading radiographic cassettes in daylight. 4,210,816, Cl. 250-468.000.
Stimtech, Inc.: *See*—
Keller, John W., Jr., 4,210,151, Cl. 128-421.000.
Stivala, Oscar G. Retention suture system. 4,210,148, Cl. 128-335.000.
Stock, Don J. R.: *See*—
Kienberger, Karl-Heinz; and Stock, Don J. R., 4,210,915, Cl. 343-786.000.
Stock, Robert M.: *See*—
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., 4,210,899, Cl. 340-146.30E.
Stoehr, Dieter: *See*—
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Stoll, James W.: *See*—
Castro, Anthony J.; and Stoll, James W., 4,210,556, Cl. 525-6.000.
Stoll, Karl-Heinz A.; and Miessler, Heinz, to Vosswerke GmbH. Batch washing machines. 4,210,004, Cl. 68-27.000.

Stone, Alan M., to Sphere Investments Limited. Valves. 4,210,311, Cl. 251-129.000.
Stone, Wilfred S. Self-illuminated case. 4,210,953, Cl. 362-189.000.
Stoneleigh Trust, The: *See*—
Massa, Frank, 4,210,969, Cl. 367-108.000.
Stothert & Pitt Limited: *See*—
Langworthy, Colin G.; and Jefferies, Ralph G., 4,209,988, Cl. 60-431.000.
Stouffer, Ronald D.; and Bowles Fluidics Corporation. Dual pattern windshield washer nozzle. 4,210,283, Cl. 239-11.000.
Stranczek, Norman J., to S&C Electric Company. Manual operating handle assembly for circuit interrupter devices. 4,210,788, Cl. 200-42.00T.
Strasser, Bernd: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,210,516, Cl. 204-284.000.
Strauss, Udo: *See*—
Hoppe, Karl; and Strauss, Udo, 4,210,506, Cl. 204-181.00C.
Streltsov, Alexei P.: *See*—
Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Strickland, John J.; and Hoover, Thomas H., to General Electric Company. Light cell auto sleever. 4,209,882, Cl. 29-33.520.
Stubbings, James H., to Potomac Applied Mechanics, Inc. Formation of radius elbows and O.G. sets. 4,210,090, Cl. 113-54.00R.
Sugano, Kazuo: *See*—
Yamamoto, Takahiro; and Sugano, Kazuo, 4,210,076, Cl. 101-111.000.
Sugawara, Hiroyuki: *See*—
Kurosawa, Yukio; Sugawara, Hiroyuki; and Kawakubo, Yukio, 4,210,790, Cl. 200-144.00B.
Sugie, Akihiko: *See*—
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, 4,210,669, Cl. 424-305.000.
Sugihara, Kunihiko: *See*—
Nakajima, Yasuo; Onoda, Michio; Sugihara, Kunihiko; and Nagumo, Shinichi, 4,210,109, Cl. 123-76.000.
Sugita, Tohru: *See*—
Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, 4,210,805, Cl. 250-370.000.
Sugiura, Youji: *See*—
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Sumari Engineering, Inc.: *See*—
Heffernan, Patrick M., 4,210,113, Cl. 123-574.000.
Sumitomo Chemical Company, Limited: *See*—
Shimomura, Hiromi; Sugie, Akihiko; and Katsube, Junki, 4,210,669, Cl. 424-305.000.
Sumitomo Metal Industries, Ltd.: *See*—
Sakamoto, Yoshiyasu; Kobayashi, Sumio; and Hatono, Akio, 4,210,023, Cl. 73-290.00R.
Sumiyoshi, Iwao; Iimure, Tamio; and Tomotsugu, Akio, to Nippon Paint Co., Ltd. Photo-curable composition for coating containing an unsaturated urethane modified polymer. 4,210,713, Cl. 430-284.000.
Summers, Thomas W.: *See*—
Kohnhorst, Earl E.; Summers, Thomas W.; and Gordon, David L., 4,210,157, Cl. 131-8.00R.
Summers, William A.; Markunas, Peter C.; and Faulkner, Lois V., to International Minerals & Chemical Corp. Method of treating 1-nitropropane. 4,210,609, Cl. 568-947.000.
Sun Oil Company of Pennsylvania: *See*—
Driscoll, Gary L., 4,210,487, Cl. 162-146.000.
Sunbeam Corporation: *See*—
Remys, Dionizas V.; and Scott, Donald R., 4,209,968, Cl. 368-273.000.
Sundstrand Corporation: *See*—
Aldrich, Allyn M., 4,210,066, Cl. 91-506.000.
Suroff, Leonard W.: *See*—
Kolt, Stanley, 4,210,277, Cl. 236-49.000.
Suss, Hans G.: *See*—
Zeindler, Stephan; and Suss, Hans G., 4,210,227, Cl. 187-29.00R.
Sutor, Norbert; and Vogelsberg, Dieter, to Siemens Aktiengesellschaft. Terminable communication cable with conductor pairs combined in groups. 4,209,966, Cl. 57-6.000.
Sutton, Gary W., to General Signal Corporation. Anti-cavitation and overload relief valve for a hydraulic system. 4,210,170, Cl. 137-493.400.
Suwa, Hisashi: *See*—
Sakurai, Sadaaki; and Suwa, Hisashi, 4,210,778, Cl. 179-1.00E.
Suzuki, Chuji; Ise, Masahiro; Inazaki, Kenzo; and Machino, Katsuyuki, to Sharp Kabushiki Kaisha. Thin-film EL display panel with light-activated write and erase means. 4,210,848, Cl. 315-169.300.
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Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Suzuki, Soushi: *See*—
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Suzuki, Tadao; and Kawada, Hirohito, to Sony Corporation. Gain and impedance switching circuit for an amplifier. 4,210,873, Cl. 330-51.000.
Svecia Silkcreen Maskiner AB: *See*—
Lindstrom, Nils A. E., 4,210,077, Cl. 101-126.000.
Svensk Lasthantering Bengt Lindahl AG: *See*—
Lindahl, Bengt E., 4,210,089, Cl. 112-417.000.
Swank, Harry R.: *See*—
Mitchell, Robert B.; and Swank, Harry R., 4,210,935, Cl. 358-246.000.
Swanson, Rollan. Desulfurizing fossil fuels. 4,210,526, Cl. 208-230.000.
Sweet, David L.: *See*—
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., 4,210,358, Cl. 296-100.000.
Sweet, Philip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment, Inc. Closure panel actuator. 4,210,358, Cl. 296-100.000.
Swern, Daniel: *See*—
Bolgiano, Nicholas C.; and Swern, Daniel, 4,210,691, Cl. 428-96.000.
Swift, Harold E., to Gulf Research and Development Company. Nickel silicate hydrogenation process. 4,210,768, Cl. 585-250.000.
Switzer, Ralph E. Valve for controlling a fluid pressure operated device. 4,210,065, Cl. 91-469.000.
Swonger, Claron W.; Bowers, Dan M.; and Stock, Robert M., to Fingermatrix, Inc. Fingerprint-based access control and identification apparatus. 4,210,899, Cl. 340-146.30E.
Symons Corporation: *See*—
Schimmel, Vernon R., 4,210,306, Cl. 249-196.000.
Sysjuk, Valentina G.; Lazarenko, Eduard T.; Ovdienko, Yaroslav A.; Bernatsek, Vladislav V.; Jurin, Vladislav F.; and Nikolaev, Anatoly F. Polymeric adhesive antihalation composition for making metal-backed photopolymeric printing forms. 4,210,569, Cl. 260-328.0EP.
Systems Control, Inc.: *See*—
Marsh, James P.; and Steadman, Howard L., 4,210,962, Cl. 364-402.000.
Sytsma, Frederick R.: *See*—
Frost, Charles C.; Gurney, Gerald W.; and Sytsma, Frederick R., 4,210,238, Cl. 198-687.000.
Szabo, Lajos: *See*—
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T & S Equipment Company: *See*—
Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company, 4,209,869, Cl. 14-69.500.
Tabara, Noboru: *See*—
Fushimi, Akihiro; Tabara, Noboru; and Isaki, Mikio, 4,210,944, Cl. 360-74.200.
Tabuchi, Toshihide; and Tsumura, Masakatsu, to Matsushita Electric Industrial Co., Ltd. Helical resonator band pass filter with novel coupling means. 4,210,884, Cl. 333-203.000.
Tachi, Katsuichi: *See*—
Ninomiya, Ichiro; Nagakura, Katsuhiko; Sakamoto, Hitoshi; and Tachi, Katsuichi, 4,210,939, Cl. 360-14.000.
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Tada, Hiroshi; and Nozu, Toshiro, to Oiles Industry Co. Ltd. Fixed support structure. 4,209,868, Cl. 14-16.100.
Taikisha Ltd.: *See*—
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, 4,210,505, Cl. 204-181.00C.
Taipalus, Larry R. Portable container seat. 4,210,363, Cl. 297-192.000.
Takabayashi, Kazuhiko, to Sony Corporation. Video projecting apparatus with raster distortion correction. 4,210,929, Cl. 358-64.000.
Takagi, Mikio; Kamioka, Hajime; Shimoda, Haruo; and Miyamoto, Hidekazu, to Fujitsu Limited. Process for producing a semiconductor device. 4,210,473, Cl. 148-189.000.
Takahashi, Kozi: *See*—
Nakayama, Takeshi; Nishimoto, Takehiko; Kawashima, Machio; Takahashi, Kozi; and Osakabe, Kuniharu, 4,210,842, Cl. 313-403.000.
Takahashi, Masamitsu, to Bankoku Needle Manufacturing Company Ltd. Foldable needle pack. 4,210,239, Cl. 206-45.130.
Takahasi, Naoki: *See*—
Aoki, Jun; Hayashida, Takashi; Komatu, Shigesabroh; Miyakawa, Seii; and Takahasi, Naoki, 4,209,898, Cl. 29-783.000.
Takaoka, Saburo; and Tsuda, Youichiro, to Pioneer Electronic Corporation. Device for improving output waveform of manually controllable pulse generator for use in preset electronic tuning control device. 4,210,828, Cl. 307-268.000.
Takara Co., Ltd.: *See*—
Ogawa, Iwakichi, 4,209,934, Cl. 46-31.000.
Takase, Masao: *See*—
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Takashima, Mutsuo; Iwanami, Sumio; and Usuda, Shinji, to Yamanouchi Pharmaceutical Co., Ltd. Benzamide derivatives. 4,210,660, Cl. 424-274.000.
Takashima, Syuzi: *See*—
Kasamatsu, Yutaka; Hiromatsu, Mutsuo; Takashima, Syuzi; Hosoya, Takasi; and Hamanaka, Takamichi, 4,210,445, Cl. 75-124.000.
Take, Hiroshi: *See*—
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Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.
Takeda Chemical Industries, Ltd.: *See*—
Ninomiya, Nobutaka; Nishino, Hiroshi; Aibe, Toshio; and Itoga, Kiyoshi, 4,210,628, Cl. 423-239.000.
Takenoya, Hideaki; and Makabe, Hachiro, to Janome Sewing Machine Co. Ltd. Sewing machine with an electronic pattern stitch control system. 4,210,088, Cl. 112-158.00E.
Takita, Yoshikazu: *See*—
Akabane, Katsumi; Kojima, Isao; Takita, Yoshikazu; Suzuki, Soushi; Ikeda, Yasuhiko; Wajima, Koichi; and Terasawa, Yoshio, 4,210,924, Cl. 357-38.000.
Takruri, Harun; and Chavers, Jane E., to Eli Lilly and Company. Flurandrenolide film formulation. 4,210,633, Cl. 424-80.000.
Talos Systems, Inc.: *See*—
Rodgers, James L.; and Fowler, Billy C., 4,210,775, Cl. 178-19.000.
Tamaki, Katsuyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Tape driving system for a tape recorder. 4,210,297, Cl. 242-201.000.
Tamaru, Munetaka: *See*—
Kume, Kazunari; Watanabe, Minoru; Oono, Hideshi; and Tamaru, Munetaka, 4,209,970, Cl. 368-76.000.
Tamazawa, Kazuharu; Fujikura, Takashi; Kojima, Tadao; and Iwanami, Masaru, to Yamanouchi Pharmaceutical Co., Ltd. Process for producing 7β-amino-7α-methoxycephalosporins. 4,210,751, Cl. 544-21.000.
Tamura, Tooru; Ojima, Nobuyuki; Kondo, Sigeru; and Kishita, Kenichirou, to Matsushita Electric Industrial Co., Ltd. Method of increasing the amplification of a transistor through use of organic compounds. 4,210,498, Cl. 204-35.00N.
Tanaka, Tomoyuki; Okamura, Masahiro; Shirasawa, Toshikatsu; and Ogawa, Takuzo, to Hitachi, Ltd. Method of simultaneously controlling the lifetimes and leakage currents in semiconductor devices by hot electron irradiation through passivating glass layers. 4,210,464, Cl. 148-1.500.
Tanaka, Yukio: *See*—
Kanazawa, Kenichi; and Tanaka, Yukio, 4,210,827, Cl. 307-264.000.
Tantillo, Robert M.; and Niven, David A., to Bob Baker Enterprises, Inc. Filter back-washing. 4,210,538, Cl. 210-333.00A.
Tarnay, Matthew G.; and Krieff, Sidney K., to Price-Pfister Brass Mfg. Co. Temperature limiting device. 4,210,284, Cl. 239-75.000.
Tashma, Zev: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,210,658, Cl. 424-273.00R.
Tate, Jack F.: *See*—
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Miyakawa, Seiichi; Tatsumi, Susumu; Sakamoto, Koji; and Ogata, Yoshihiro, 4,210,864, Cl. 324-204.000.
Tatum, James R.; and Dayus, Barry R. Ceiling fixture with thermal protection. 4,210,070, Cl. 98-40.00D.
Tawara, Ikuo: *See*—
Sogi, Shinroku; Yoshinaga, Makoto; Shinohara, Toshio; Aihara, Takayuki; and Tawara, Ikuo, 4,210,724, Cl. 435-292.000.
Taylor, Alfred. Spanner wrench. 4,210,037, Cl. 81-90.00C.
Taylor, John H., to English Clays Lovering Pochin & Company, Limited. Method of manufacturing paper or cardboard products. 4,210,490, Cl. 162-175.000.
Taylor, Joseph D. F., to Lucas Industries Limited. Battery charging systems for road vehicles. 4,210,856, Cl. 320-17.000.
Taylor, Robert K. Cable straightener. 4,210,014, Cl. 72-389.000.
Taylor, William I.: *See*—
Yoshida, Takao; Mookherjee, Braja D.; Kamath, Venkatesh; Hall, John B.; Taylor, William I.; and Schmitt, Frederick L., 4,210,767, Cl. 568-345.000.
TDK Electronics, Co., Ltd.: *See*—
Yoneyama, Tetsuhito; Hori, Tetsuo; and Ojima, Teruhiko, 4,210,471, Cl. 148-102.000.
Teach, Eugene G., to Stauffer Chemical Company. Method of preparation for aromatic N-substituted halo-substituted 2-pyrrolidinones. 4,210,589, Cl. 260-326.5FL.
Teague, James R.: *See*—
Burkhart, Gordon H.; Rice, Robert R.; and Teague, James R., 4,210,389, Cl. 350-321.000.
Technicon Instruments Corporation: *See*—
Pelavin, Milton H., 4,210,809, Cl. 250-343.000.
Technion Research & Development Foundation Ltd.: *See*—
Meretsky, Paul L.; and Carmon, Amiram, 4,210,859, Cl. 323-44.00R.
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Terasawa, Yoshio: *See*—
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Terry, Bernard W. H.: *See*—
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Allen, Joseph C.; and Tate, Jack F., 4,210,205, Cl. 166-271.000.
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Christopher, Charles A., Jr.; and Clauset, Alvin O., Jr., 4,210,204, Cl. 166-270.000.
Cummings, 4,210,425, Cl. 44-72.000.
Texas Instruments Incorporated: *See*—
Baboian, Robert, 4,209,896, Cl. 29-855.000.
Keen, Ralph S., 4,209,894, Cl. 29-577.00R.
Noble, Robert T., 4,209,974, Cl. 368-84.000.
Textron Inc.: *See*—
Davies, Evan E., 4,209,897, Cl. 29-768.000.
Thetford Corporation: *See*—
Coviello, Allan J.; Bernardin, Frederick E.; and Kalb, Kathryn R., 4,210,528, Cl. 210-4.000.
Thiele, Kurt: *See*—
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,656, Cl. 424-273.00R.
Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, 4,210,657, Cl. 424-273.00R.
Thomas, H. Jeanette: *See*—
Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Thompson, Gerald L.: *See*—
Paschal, Gloria C.; and Thompson, Gerald L., 4,210,584, Cl. 260-244.400.
Thorpe, Alfred, to Sir James Farmer Norton & Co. Limited. Washing machines for use in the textile industry. 4,210,006, Cl. 68-205.00R.
Thummler, Ursus: *See*—
Dany, Franz-Josef; Thummler, Ursus; Wortmann, Joachim; Staendeke, Horst; and Kandler, Joachim, 4,210,630, Cl. 423-265.000.
TII Corporation: *See*—
Simokat, Frank L., 4,210,779, Cl. 179-2.510.
Timex Corporation: *See*—
Flumm, Paul T., 4,209,976, Cl. 368-187.000.
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Sirotinsky, Alexandr A.; Prokofiev, Vladimir I.; Timonin, Vitaly I.; Smolnikov, Nikolai V.; Karyaev, Vladimir P.; Streltsov, Alexei P.; Belov, Jury N.; Saveliev, Valentin P.; and Yazikov, Boris G., 4,210,096, Cl. 118-58.000.
Tinsley, John M.: *See*—
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Titus, Paul E., to Shell Oil Company. Removal of sulfur compounds from coal during pipeline transport. 4,210,422, Cl. 44-15.00R.
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Tkalenko, Victor J., Jr.: *See*—
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TMC Corporation: *See*—
Krob, Erwin; and Weigl, Erwin, 4,210,342, Cl. 280-636.000.
Todoroki, Nobuaki; Yasukawa, Junichi; Kawamura, Norio; and Kasai, Akio, to Shinto Paint Co., Ltd.; Honda Motor Co., Ltd.; and Taikisha Ltd. Method and apparatus for electrodeposition coating. 4,210,505, Cl. 204-181.00C.
Togashi, Kunihiko: *See*—
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.
Tohoku Musen Denki Co., Ltd.: *See*—
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Tohoku Ricoh, Ltd.: *See*—
Ikenoue, Tsuneo; Suzuki, Mitsugi; and Liu, Shin-Yng, 4,210,958, Cl. 363-124.000.
Toke, Laszlo: *See*—
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Tokico Ltd.: *See*—
Ohtani, Iwao, 4,210,410, Cl. 418-150.000.
Tokunaga, Yoichi: *See*—
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Tokyo Automatic Control Kabushiki Kaisha: *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Komatsu, Shigeru, 4,210,689, Cl. 427-88.000.
Tamaki, Katsuyuki, 4,210,297, Cl. 242-201.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Higuchi, Iwao; and Fujita, Takashi, 4,210,792, Cl. 219-10.49R.
Kobayashi, Tetsuji; Sugita, Tohru; and Matsuo, Noboru, 4,210,805, Cl. 250-370.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,210,718, Cl. 435-41.000.
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, to Monsanto Company. Production of tumor angiogenesis factor by cell culture. 4,210,719, Cl. 435-41.000.
Tomaro, Patrick M., to Conair Corporation. Foldable curling iron providing for self-storage and safety disconnection. 4,210,797, Cl. 219-225.000.
Tominaga, Michiaki; Tone, Hitoshi; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril compounds. 4,210,753, Cl. 544-128.000.

Tomioka, Hiromi: *See—*
Okada, Masanori; Murakami, Yasushi; Tomioka, Hiromi; Shirakawa, Norio; and Togashi, Kunihiko, 4,210,440, Cl. 71-98.000.

Tomotsugu, Akio: *See—*
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Fraser, Donald L., Jr.; and Tompsett, Michael F., 4,210,950, Cl. 361-329.000.

Tone, Hitoshi: *See—*
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Topolnitsky, Oleg D.: *See—*
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Torisawa, Akira: *See—*
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Torrington Company, The: *See—*
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Torta, Franco; and Torta, Mario, to Lifel di Torta Franco & C. s.a.s. Support and guide device for adjustable vehicle seats. 4,210,303, Cl. 248-429.000.

Torta, Mario: *See—*
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Toth, Istvan: *See—*
Szantay, Csaba; Szabo, Lajos; Toke, Laszlo; Toth, Istvan; Virag, Sandor; Kanyo, Erzsebet; and David, Agoston, 4,210,650, Cl. 424-258.000.

Totten, George E.: *See—*
Williams, Thomas C.; and Totten, George E., 4,210,459, Cl. 106-308.00N.

Toubkin, Walter M.; and Mulley, Alan J., to Space Age Electronics Limited. Echo sounders. 4,210,970, Cl. 367-109.000.

Tourneux, Michel, to U.S. Philips Corporation. Generator panel having solar cells incorporated in a laminated assembly. 4,210,462, Cl. 136-89.0EP.

Touze, Francois. Heat exchange devices for cooling the wall and refractory of a blast furnace. 4,210,101, Cl. 122-20.00B.

Towmotor Corporation: *See—*
Povejsil, James H., 4,210,339, Cl. 277-153.000.

Toy Builders: *See—*
Orenstein, Henry, 4,209,938, Cl. 46-116.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Yamane, Kiyoshi; Abe, Shunzo; Sawada, Shuzo; and Matsumoto, Hatsuo, 4,210,412, Cl. 8-471.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.
Nishibori, Kengi; Hayashi, Fumio; and Ogawa, Tadashi, 4,210,115, Cl. 123-122.00D.
Nohira, Hidetaka; Ito, Sumio; and Oki, Hisashi, 4,210,105, Cl. 123-277.000.
Shiomi, Masanao; Ishikawa, Masakazu; and Kato, Hiroshi, 4,210,343, Cl. 280-668.000.
Watanabe, Haruo, 4,210,114, Cl. 123-489.000.

Transit Systems Technology, Inc.: *See—*
Gomez, Jim H.; and Davila, Jose E., 4,210,801, Cl. 235-92.0AC.

Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Detergent compositions containing 1-acyl-2,6,6-trimethylcyclohexene derivatives and processes for preparing same. 4,210,553, Cl. 252-174.110.

Tresper, Erhard: *See—*
Grigo, Ulrich; Merten, Josef; Binsack, Rudolf; and Tresper, Erhard, 4,210,579, Cl. 525-88.000.

Trine, Ralph D.; Le Clear, Robert L.; and T & S Equipment Company. Lifting apparatus for dockboard. 4,209,869, Cl. 14-69.500.

Trotter, Jimmy R.; Joyner, Frederick B.; and McConnell, Richard L., to Eastman Kodak Company. Blends of substantially amorphous olefin copolymers, compatible tackifying resins and plasticizing oils useful as hot melt, pressure-sensitive adhesives. 4,210,570, Cl. 260-33.6AQ.

True Temper Corporation: *See—*
Fee, Graham M., 4,210,281, Cl. 238-327.00R.

Trujillo, John J.; and Brown, Timothy E., to LST Electronics, Inc. Controllable liquid dispenser. 4,210,261, Cl. 222-43.000.

Trullas, Isidro F., to Argelich, Termes y Cia., S.A. Apparatus for the wet processing of textile fabrics in rope form. 4,210,005, Cl. 68-148.000.

Tsai, Min H., to Unitek Corporation. Dental restorations using castings of non-precious metals. 4,210,447, Cl. 75-171.000.

Tsaknis, Peter J.; and Lux, Virginia J., to United States of America, Army. Floating receptacle for collecting histologic material. 4,210,099, Cl. 118-402.000.

Tsubata, Noritaka, to Yoshida Kogyo K.K. Woven fastener stringer. 4,210,180, Cl. 139-384.00B.

Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, to Hitachi, Ltd. Fourier-transform nuclear gyromagnetic resonance spectrometer. 4,210,861, Cl. 324-308.000.

Tsuda, Youichiro: *See—*
Takaoka, Saburo; and Tsuda, Youichiro, 4,210,828, Cl. 307-268.000.

Tsukada, Naonobu; and Nishimura, Katsuyoshi, to Kabushiki Kaisha Morita Seisakusho. Dental treatment chair assembly. 4,209,907, Cl. 433-33.000.

Tsukamoto, Yutaka: *See—*
Nakamura, Hirokazu; Ohinouye, Tsuneo; Hori, Kenji; Kiyota, Yuhiko; Nakagami, Tatsuro; Tsukamoto, Yutaka; and Akishino, Katsuo, 4,210,104, Cl. 123-259.000.

Tsumura, Masakatsu: *See—*
Tabuchi, Toshihide; and Tsumura, Masakatsu, 4,210,884, Cl. 333-203.000.

Ueda, Makoto; Shida, Masaharu; and Torisawa, Akira, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,209,971, Cl. 368-76.000.

Uede, Hisashi: *See—*
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,907, Cl. 340-785.000.
Hamada, Hiroshi; Take, Hiroshi; Inami, Yasuhiko; and Uede, Hisashi, 4,210,909, Cl. 340-763.000.

Ueki, Tetsuro; Ogino, Hajime; and Yaguchi, Shigeru, to Jyoban Jyuki Kensetsu Kabushiki Kaisha. Display device of louvre arrangement. 4,209,926, Cl. 40-437.000.

Ueno, Yasuhiko; Saeki, Yoshito; Akiyama, Takuya; and Fujita, Masao, to Ogawa & Co., Ltd. Sublimable fungicidal compositions containing triisopropyl- or tritertiary-butyl-s-trioxane carriers. 4,210,640, Cl. 424-181.000.

Ueno, Yoshiki: *See—*
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Toru; and Ueno, Yoshiki, 4,210,111, Cl. 123-414.000.

Ultra Mortar, Inc.: *See—*
Miller, Richard L., 4,210,456, Cl. 106-92.000.

Underwood, David C.: *See—*
Logan, Ted J.; and Underwood, David C., 4,210,594, Cl. 260-428.500.

Union Carbide Corporation: *See—*
Hamamura, Tadashi; Noda, Isao; Yoshii, Tadashi; Takase, Masao; and Watanabe, Terumi, 4,210,726, Cl. 521-110.000.
Holcombe, Thomas C., 4,210,771, Cl. 585-701.000.
Lewis, Jennings B., III; and Kelly, Peter P., 4,210,442, Cl. 75-60.000.
Williams, Thomas C.; and Totten, George E., 4,210,459, Cl. 106-308.00N.

Union Tank Car Company: *See—*
Parsons, James D.; and Wike, Paul S., 4,210,254, Cl. 220-22.000.

United States Gypsum Company: *See—*
Wendt, Alan C., 4,209,953, Cl. 52-241.000.

United States of America
Agriculture: *See—*
Pardo, Clay E., Jr.; Foster, Robert E.; and Fong, Willie, deceased, 4,210,415, Cl. 8-128.00A.
Army: *See—*
Brothers, Jack, 4,210,082, Cl. 102-8.000.
Liberman, Harold J., 4,210,298, Cl. 244-3.210.
Pollehn, Herbert K.; and Bratton, Jerry L., 4,210,681, Cl. 427-64.000.
Tsaknis, Peter J.; and Lux, Virginia J., 4,210,099, Cl. 118-402.000.
Energy: *See—*
Lebacqz, Jean V., 4,210,845, Cl. 315-5.250.
Wittig, J. Michael; and Jennings, Stephen J., 4,210,819, Cl. 290-52.000.
Wittig, J. Michael, 4,210,820, Cl. 290-52.000.
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Chiang, Peter K.; Cantoni, Guilio L.; Bader, John P.; Shannon, William M.; Thomas, H. Jeanette; and Montgomery, John A., 4,210,639, Cl. 424-180.000.
Montgomery, John A., 4,210,745, Cl. 536-26.000.
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Ramohalli, Kumar N. R. Silicone containing solid propellant. 4,210,474, Cl. 149-19.200.
National Aeronautics and Space Administration: *See—*
Batten, Carmen E., 4,210,401, Cl. 356-369.000.
Obler, Henry D., 4,210,278, Cl. 236-49.000.
Navy: *See—*
Hill, Eugene R.; and Law, Eugene L., 4,210,871, Cl. 455-137.000.
Martin, William H., Jr., 4,210,971, Cl. 367-134.000.
Ream, Donald F., 4,210,083, Cl. 102-18.00M.
Rubin, David, 4,210,881, Cl. 333-110.000.
Shannon, Roger L.; Watkins, Dale F.; and Pogson, John T., 4,210,847, Cl. 315-111.900.
Veterans' Affairs: *See—*
Graupe, Daniel, 4,209,860, Cl. 3-1.100.

U.S. Philips Corporation: *See—*
Gerkema, Jan; and Muijderman, Everhardus A., 4,210,371, Cl. 308-9.000.
Keuleman, Alexander H. F.; and Hyde, David R., 4,209,915, Cl. 34-48.000.
Roza, Engel; and Voorman, Johannes O., 4,210,882, Cl. 333-166.000.
Shannon, John M., 4,210,922, Cl. 357-24.000.
Tourneux, Michel, 4,210,462, Cl. 136-89.0EP.

Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., 4,210,800, Cl. 219-544.000.
United States Postage Corporation: *See—*
Criscitelli, Fred J., 4,210,236, Cl. 194-1.00D.
United States Steel Corporation: *See—*
Galer, Herbert W., 4,210,179, Cl. 138-96.00T.
United Technologies Corp.: *See—*
Rannenberg, George C., 4,209,993, Cl. 62-80.000.
Unitek Corporation: *See—*
Tsai, Min H., 4,210,447, Cl. 75-171.000.
University of Delaware: *See—*
Ih, Charles C., 4,210,803, Cl. 455-610.000.
University of Miami: *See—*
Greer, Sheldon, 4,210,638, Cl. 424-180.000.
University of Sydney: *See—*
Gillings, Barrie R. D., 4,209,905, Cl. 433-189.000.
Uniwave, Inc.: *See—*
Baumann, John; Abrams, Abraham; and Broitman, Marvin, 4,210,225, Cl. 184-28.000.
Unterstenhofer, Ilse, heiress-at-law: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
Unterstenhofer, Leo, deceased: *See—*
Engler, Peter; Nagel, Otto; Unterstenhofer, Leo, deceased; Frielingsdorf, Hans; Berbner, Heinz; Mueller-Tamm, Heinz; and Stoehr, Dieter, 4,210,615, Cl. 264-11.000.
UOP Inc.: *See—*
Antos, George J., 4,210,523, Cl. 208-139.000.
Antos, George J., 4,210,524, Cl. 208-139.000.
Antos, George J., 4,210,561, Cl. 252-441.000.
Antos, George J., 4,210,769, Cl. 585-379.000.
Hilfman, Lee; and O'Hara, Mark J., 4,210,522, Cl. 208-111.000.
Michalko, Edward, 4,210,629, Cl. 423-242.000.
Pinke, Paul A., 4,210,608, Cl. 568-451.000.
Upat GmbH & Co.: *See—*
Goring, Hermann; List, Hansjorg; Brunswig, Klaus; and Labatzke, Winfried, 4,210,057, Cl. 85-83.000.
Upjohn Company, The: *See—*
Johnson, Roy A., 4,210,748, Cl. 542-426.000.
Urion, Kenard E.; and Cleminshaw, Douglas R., to Scott Paper Company. Cutting assembly. 4,210,043, Cl. 83-175.000.
Ushiku, Kenichi; and Hasegawa, Akira, to Hitachi, Ltd.; and Nissan Motor Company, Limited. Impact detecting switch. 4,210,789, Cl. 200-61.45R.
USM Corporation: *See—*
Pretty, Frederick A., 4,210,046, Cl. 83-525.000.
Usuda, Shinji: *See—*
Takashima, Mutsuo; Iwanami, Sumio; and Usuda, Shinji, 4,210,660, Cl. 424-274.000.
Utsumi, Yoshiharu: *See—*
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,210,861, Cl. 324-308.000.
Utzmann, Rene, to Ste d'Application Plastique, Mecanique et Electronique Plastique-Mecanidue S.A. Arrangement and process for activating and arresting the operation of a heat-forming machine. 4,209,957, Cl. 53-453.000.
Vaarala, Harri. Control method. 4,210,228, Cl. 187-73.000.
Vachhani, Vasantrai A.; Soderstrom, Melvin A.; and Hughes, Richard L., to AMP Incorporated. Modular barrier block. 4,210,379, Cl. 339-101.000.
Vaisala Oy: *See—*
Kallio-Konno, Kari, 4,210,870, Cl. 455-95.000.
Van Benthuysen, John D., to CTS Corporation. Variable resistance control and method of making the same. 4,210,896, Cl. 338-159.000.
Van Bokestal, Andre M. A.; and Belhomme, Charles J. G., to U.S. Philips Corporation. Heating element comprising a PTC-resistor body. 4,210,800, Cl. 219-544.000.
Vance, John E. Eyeless fishing rod employing novel hand and reel gripping means. 4,209,931, Cl. 43-22.000.
van der Lely, Cornelis. Agricultural implement. 4,210,209, Cl. 172-47.000.
Vanlerberghe, Guy; and Rosenbaum, Georges, to L'Oreal. Aminated γ-dialdehyde; methods for preparing the same and cosmetic compositions containing the same. 4,210,755, Cl. 544-175.000.
VanMeter, Kenneth R., to Harris Corporation. Linear digital phase lock loop. 4,210,776, Cl. 375-120.000.
Variani Associates, Inc.: *See—*
Kent, Bryan P., 4,210,483, Cl. 156-443.000.
Vary, Robert F., to Mamo, Anthony C. Energy saving device for habitable building enclosures having a heat changing system. 4,210,200, Cl. 165-98.000.
Vasiliev, Petr E.; Ragulskis, Kazimiras M.; Savitskas, Ionas A.; Misikov, Vitaly M.; and Topolnitsky, Oleg D. Piezoelectrically driven torsional vibration motor. 4,210,837, Cl. 310-323.000.
VEB Rationalisierung Halle: *See—*
Dudar, Klaus; Seliger, Ewald; Hubner, Gertraude; and Banse, Wilhelm, 4,210,676, Cl. 426-238.000.
Veesicol Chemical Corporation: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,210,452, Cl. 106-18.180.
Vercellotti, Leonard C.: *See—*
Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., 4,210,901, Cl. 340-310.00R.
Verloop, Jan; and Braam, Johannes W. T. M., to Shell Oil Company. Method for increasing the hydrogen sulphide concentration in an acid gas. 4,210,627, Cl. 423-220.000.
Ver Mehren, Hubert R., to Ga-Vehren Engineering Company. Fan folding and stacking device. 4,210,318, Cl. 270-79.000.
Vermoehlen, Werner: *See—*
Renzel, Peter; and Vermoehlen, Werner, 4,210,904, Cl. 340-347.0AD.
Verry, Monique: *See—*
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Vicari, Ronald P.; and Yampol, Barry, to Graphic Scanning Corp. Digitally controlled telephone answering switching system. 4,210,783, Cl. 179-18.0FC.
Vidal, Andre: *See—*
Boret, Roger; Bronner, Charles; Huin, Roland; and Vidal, Andre, 4,210,519, Cl. 208-49.000.
Villa, Joseph N.: *See—*
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Vinals, Joaquin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vinals, Joaquin F.; Kiwala, Jacob; Wilson, Richard A.; and Mookherjee, Braja D., to International Flavors & Fragrances Inc. 5-Isopropyl-3-nonene-2,8-dione as flavorant and as a flavor enhancer in conjunction with smoking tobacco and smoking tobacco articles. 4,210,158, Cl. 131-10.00R.
Virag, Sandor: *See—*
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Virnig, Michael J., to Henkel Corporation. Benzene sulfonamido pyridine derivatives. 4,210,759, Cl. 546-312.000.
Vitkovits, John A.: *See—*
Dimitroff, Edward; and Vitkovits, John A., 4,210,103, Cl. 123-1.00A.
Vlad, Constantin; and Paulitsch, Hans, to Stahlwerke Peine-Salzgitter Aktiengesellschaft. Cooling arrangement. 4,210,010, Cl. 72-201.000.
Vock, Manfred H.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,210,553, Cl. 252-174.110.
Vodicka, Vincent; and Holub, Fred F., to General Electric Company. All plastic headlamp. 4,210,841, Cl. 313-221.000.
Voest-Alpine Aktiengesellschaft: *See—*
Hargassner, Reinhard; Holleis, Gunter; and Hoscher, Rudolf, 4,210,197, Cl. 164-416.000.
Vogelsberg, Dieter: *See—*
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von Holdt, John W. Seal for plastic buckets and cans. 4,210,258, Cl. 220-306.000.
von Holdt, John W. Pivot assembly mold method. 4,210,620, Cl. 264-163.000.
von Konig, Anita: *See—*
Odenwalder, Heinrich; von Konig, Anita; Moll, Franz; Patzold, Walter; Rosenhahn, Lothar; and Sommer, Friedhelm, 4,210,714, Cl. 430-372.000.
Voorhees, Francis W.: *See—*
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Voorman, Johannes O.: *See—*
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Voss, Josef, to Voss, Josef. Bird cage. 4,210,100, Cl. 119-17.000.
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Stoll, Karl-Heinz A.; and Miessler, Heinz, 4,210,004, Cl. 68-27.000.
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P. Method and device for detecting icing of objects found in air flow. 4,210,021, Cl. 73-170.00R.
Vykhodtseva, Tatyana P.: *See—*
Vykhodtsev, Nikolai A.; Vykhodtseva, Tatyana P.; Bantsekin, Viktor I.; Borisov, Boris K.; and Grishin, Oleg P., 4,210,021, Cl. 73-170.00R.
W. R. Grace & Co.: *See—*
Dodson, Vance H.; and Roberts, Lawrence R., 4,210,457, Cl. 106-97.000.
Markofsky, Sheldon B., 4,210,489, Cl. 162-164.00R.
W. Schlafhorst & Co.: *See—*
Schmid, Reinhold, 4,210,031, Cl. 74-89.210.
Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe mbH: *See—*
Schmidt, Dietrich; Hofer, Johann; and Herzer, Heinz, 4,210,486, Cl. 156-601.000.
Wagman, Julius, to Helene Curtis Industries, Inc. Creme rinses with hair holding properties. 4,210,161, Cl. 132-7.000.
Wagner, Paul E.: *See—*
Hopkins, Gregory T.; and Wagner, Paul E., 4,210,780, Cl. 370-80.000.
Wahl, Peter: *See—*
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Wakamiya, Tadamitsu, to Sony Corporation. Motor control system. 4,210,851, Cl. 318-257.000.

Wakazono, Kenji: *See—*
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Waleckx, Jean: *See—*
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Walker, Christopher J.: *See—*
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Walker, Peter S.; and Borzone, Rocco, to Howmedica, Inc. Joint prosthesis. 4,209,861, Cl. 3-1.911.

Walker, Stephen J.: *See—*
Lamb, Raymond K.; Weathers, Richard E.; Coffey, Lacey C.; and Walker, Stephen J., 4,209,891, Cl. 29-466.000.

Waller, Lonnie J.: *See—*
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Wallin, Lloyd A.; and Filkins, David E. Method and device for drying gloves. 4,209,913, Cl. 34-21.000.

Walters, Frank, to Ferranti Limited. Gas discharge display panel. 4,210,838, Cl. 313-198.000.

Waltersdorfer, Anna: *See—*
Bock, Klaus-Detlef; and Waltersdorfer, Anna, 4,210,642, Cl. 424-200.000.

Waltz, Richard W., to Allen-Bradley Company. Method and apparatus for monitoring line voltage in a polyphase source. 4,210,948, Cl. 361-76.000.

Wang, Samuel S.; and Lewellyn, Morris E., to American Cyanamid Company. Process for dewatering mineral concentrates. 4,210,531, Cl. 210-51.000.

Ward, Clive: *See—*
Ward, Trevor; and Ward, Clive, 4,210,411, Cl. 431-160.000.

Ward, Trevor; and Ward, Clive. Self-recuperative burner. 4,210,411, Cl. 431-160.000.

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Olsen, Robert A., 4,210,890, Cl. 335-281.000.

Warner-Lambert Company: *See—*
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Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., 4,210,764, Cl. 568-618.000.

Wasik, Ronald J. Pasta testing device. 4,210,020, Cl. 73-169.000.

Watanabe, Atsumi, to Hitachi, Ltd. Method and system of controlling high voltage direct current power transmission plants. 4,210,956, Cl. 363-51.000.

Watanabe, Haruo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio control apparatus for an internal combustion engine. 4,210,114, Cl. 123-489.000.

Watanabe, Minoru: *See—*
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Watanabe, Morio; and Nishimura, Sanji, to Solex Research Corporation of Japan. Process for recovery of waste H_2SO_4 and HCl. 4,210,502, Cl. 204-151.000.

Watanabe, Terumi: *See—*
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Watkins, Dale F.: *See—*
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Watson Bowman Associates, Inc.: *See—*
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Watson, Stewart C., to Watson Bowman Associates, Inc. Reinforced elastomer products. 4,210,698, Cl. 428-327.000.

Wave Energy Development I Vastmanland Aktiebolag: *See—*
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Wavepower Limited: *See—*
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Weathers, Richard E.: *See—*
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Weaver, Lelland A. C.: *See—*
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Weaver, Max A.: *See—*
Clark, Gary T.; and Weaver, Max A., 4,210,586, Cl. 260-207.100.

Weaver, Roy: *See—*
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Webb, William G. Water treating device. 4,210,613, Cl. 261-120.000.

Weber, Carl L., to Hydrocarbon Research, Inc. Method and apparatus for drying a moisture-containing particulate material. 4,209,911, Cl. 34-9.000.

Weber, Klaus: *See—*
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Webster, R. Daniel: *See—*
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Weghaupt, Erich; and Krieger, Gerhard, to Kraftwerk Union Aktiengesellschaft. Device for cooling and electrically connecting field-current lines to water-cooled turbogenerator rotors. 4,210,834, Cl. 310-61.000.

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Weigl, Erwin: *See—*
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Weil, Ernest L.: *See—*
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Weiner, Jay H., to Airway Industries, Inc. Flat-pack luggage case. 4,210,230, Cl. 190-43.000.

Weiner, Lewis. Die casting apparatus. 4,210,196, Cl. 164-152.000.

Weiss, Jacob B. Eavestrough bracket. 4,210,301, Cl. 248-48.200.

Weiss, Margaret R. Portable environmental chamber. 4,210,073, Cl. 99-483.000.

Weiwers, Rene: *See—*
Melan, Corneille; and Weiwers, Rene, 4,210,087, Cl. 110-346.000.

Welsh, Thomas M.: *See—*
Davis, Bernard H.; and Welsh, Thomas M., 4,210,682, Cl. 427-178.000.

Wendt, Alan C., to United States Gypsum Company. Ceiling runner attachment system and clip therefor. 4,209,953, Cl. 52-241.000.

Wendt, David W. Slide holder tray. 4,209,923, Cl. 40-158.00B.

Wern, Lars A. Touch control switch. 4,210,822, Cl. 307-116.000.

Wernicke, Hans J.; and Kreuter, Walter, to Linde Aktiengesellschaft. Unsupported catalysts in the production of olefins. 4,210,520, Cl. 208-57.000.

Wessel, Wolf; and Sautter, Wilfried, to Robert Bosch GmbH. Method and apparatus for regulating a combustible mixture. 4,210,106, Cl. 123-489.000.

Western Electric Company, Inc.: *See—*
Brzostek, Melvin W., 4,210,380, Cl. 339-107.000.

Western Gear Corporation: *See—*
Obear, Robert F., 4,209,948, Cl. 51-92.00R.

Westfalia Separator Aktiengesellschaft: *See—*
Zettier, Karl-Heinz, 4,210,275, Cl. 233-20.00R.

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Bhalla, Ranbir S., 4,210,840, Cl. 313-218.000.
Jacomini, Omar J., 4,210,911, Cl. 343-7.700.
Kouba, Carroll C., 4,210,836, Cl. 310-112.000.
Matsko, Joseph J.; Hill, Robert H.; Skalka, Paul; and Maier, Alfred E., 4,210,887, Cl. 335-6.000.
Newhouse, Paul D.; and Allen, Charles M., 4,210,913, Cl. 343-123.000.
Pleasance, Lyn D.; Riedel, Ernest P.; and Weaver, Lelland A. C., 4,210,877, Cl. 331-94.5PE.
Rosa, John; and Gyugyi, Laszlo, 4,210,860, Cl. 323-119.000.
Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., 4,210,901, Cl. 340-310.00R.

Westmark, John E.: *See—*
Naidich, Herbert H.; and Westmark, John E., 4,210,912, Cl. 343-7.700.

Westrick, Dale R. Carrier and handle therefor. 4,210,244, Cl. 206-373.000.

Westron of Canada Limited: *See—*
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Whatman Reeve Angel Limited: *See—*
Perrotta, Kenneth A., 4,210,540, Cl. 210-497.00R.

White, Carl A. Boot buckling aid. 4,210,035, Cl. 81-3.00R.

White Consolidated Industries, Inc.: *See—*
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Loos, John H., 4,210,071, Cl. 98-94.0AC.

White, Kenneth W., to Atlas Tool & Manufacturing Co. Height-adjusting assembly for implement wheels. 4,210,340, Cl. 280-43.170.

Whitlow Computer Services, Inc.: *See—*
Whitlow, Duane L.; and Sasson, Azra, 4,210,961, Cl. 364-300.000.

Whitlow, Duane L.; and Sasson, Azra, to Whitlow Computer Services, Inc. Sorting system. 4,210,961, Cl. 364-300.000.

Whittaker Corporation: *See—*
Mansukhani, Ishwar R., 4,210,916, Cl. 346-1.100.

Whyte, Ian A.; Vercellotti, Leonard C.; and McGivern, James P., to Westinghouse Electric Corp. Signal repeater for a distribution network communication system. 4,210,901, Cl. 340-310.00R.

Wike, Paul S.: *See—*
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Wilharm, Fred B., to St. Regis Paper Company. Steam seal of bag ply. 4,210,480, Cl. 156-308.400.

Wilhelm, Rudolf: *See—*
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Willemin, Paul, to Willemin Machines S.A. Apparatus for forming non-circular workpieces. 4,210,039, Cl. 82-18.000.

Williams, Chester I. Composite forms for constructing concrete walls. 4,210,305, Cl. 249-191.000.

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Williams, Thomas C.; and Totten, George E., to Union Carbide Corporation. Polymer composite articles containing polysulfide silicon coupling agents. 4,210,459, Cl. 106-308.00N.
Williamson, Violetta. Game with game board and pieces. 4,210,336, Cl. 273-258.000.
Wilson, Charles A.; and Mixan, Craig E., to Dow Chemical Company, The. (1,4)Dithiino(2,3-b)(1,2,5)-thiadiazole(3,4-e)pyrazine-6,7-dicarbonitrile. 4,210,645, Cl. 424-250.000.
Wilson, Edward L., Jr.; and Mitchell, Willard N., to Exxon Research & Engineering Co. Hydrogen-donor coal liquefaction process. 4,210,518, Cl. 208-10.000.
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Wilson, Henry G. E.: *See*—
Harrison, David V.; Weaver, Roy; and Wilson, Henry G. E., 4,210,098, Cl. 118-317.000.
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Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,547, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,548, Cl. 252-76.000.
Hirozawa, Stanley T.; O'Brien, Edward F.; and Wilson, Joe C., 4,210,549, Cl. 252-76.000.
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Wilzig, Herbert; and Schuessler, Charles J. Door stop. 4,209,876, Cl. 16-82.000.
Windgassen, Richard J.; and Ott, Louis E., to Standard Oil Company (Indiana). Liquid fertilizer for supply of sulfur, nitrogen and micronutrient metals. 4,210,437, Cl. 71-28.000.
Windmoller & Holscher: *See*—
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Winey, James M., to Magnepan, Incorporated. Magnetic field structure for planar speaker. 4,210,786, Cl. 179-115.5PV.
Winter, Joseph, to Olin Corporation. Process and apparatus for making composite sheet and heat exchanger panels therefrom. 4,209,885, Cl. 29-157.30V.
Winter, Joseph; Breedis, John F.; and Mravic, Brian, to Olin Corporation. Process and apparatus for making heat exchanger panels. 4,209,886, Cl. 29-157.30V.
Wirth, Hermann O.; and Wehner, Hermann W., to Ciba-Geigy Corporation. Process for the production of organo-tin compounds. 4,210,595, Cl. 260-429.700.
Witte, Earl L. Toy aircraft. 4,209,937, Cl. 46-81.000.
Wittig, J. Michael; and Jennings, Stephen J., to United States of America, Energy. Open cycle ocean thermal energy conversion steam control and bypass system. 4,210,819, Cl. 290-52.000.
Wittig, J. Michael, to United States of America, Energy. Open cycle ocean thermal energy conversion system structure. 4,210,820, Cl. 290-52.000.
Wittren, Richard A.: *See*—
Kittle, Carl E.; and Wittren, Richard A., 4,209,984, Cl. 60-328.000.
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Wolff, Edwin K.; and Schwenzer, Alfred F., to NJM, Inc. Labeling machines. 4,210,481, Cl. 156-357.000.
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Wurtman, Richard J.; Wurtman, Judith J.; and Fernstrom, John D., to Massachusetts Institute of Technology. Composition and method for suppressing appetite for calories as carbohydrates. 4,210,637, Cl. 424-180.000.
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Wyler, Siegfried: *See*—
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Yang, Kang; Nield, Gerald L.; and Washecheck, Paul H., to Conoco, Inc. Barium oxide/cresylic acid catalyzed ethoxylation. 4,210,764, Cl. 568-618.000.
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Yonezawa, Keitaro, to Kabushiki Kaisha Neriki. Pressure-responsive valve unit for a fluid container. 4,210,168, Cl. 137-454.500.
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Young, Rodney C.: *See*—
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Younger, Gilbert W. Channel plate for automatic transmissions. 4,210,034, Cl. 74-606.00R.

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Zamora, Zenon J.: *See*—
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Zardi, Umberto, to Snamprogetti, S.p.A. Method for the preparation of urea with a high-yield reactor. 4,210,600, Cl. 260-555.00A.

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Zeindler, Stephan; and Suss, Hans G., to Inventio AG. Apparatus for selecting a storey call at an elevator system. 4,210,227, Cl. 187-29.00R.

Zengel, Hans G.: *See*—
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Zenith Radio Corporation: *See*—
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Zettier, Karl-Heinz, to Westfalia Separator Aktiengesellschaft. Continuously operating centrifugal separator. 4,210,275, Cl. 233-20.00R.

Zickendraht, Christian: *See*—
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Zielke, Alfred, to Elmeg-Electro-Mechanik GmbH. Keyboard construction. 4,210,787, Cl. 200-5.0EA.

Zimmerman, Gary J.: *See*—
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Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Imidazolyl vinyl ethers and process for preparing same. 4,210,656, Cl. 424-273.00R.

Zirngibl, Ludwig; Fischer, Johanna; and Thiele, Kurt, to Siegfried Aktiengesellschaft. Aryl imidazolyl vinyl ethers and processes for using same. 4,210,657, Cl. 424-273.00R.

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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Bexford Limited: *See—*
Kwok, John C., T996,002, Cl. 430-152.000.

Frederick, Leland L.: *See—*
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.

Kwok, John C., to Bexford Limited. Recording materials. T996,002, 7-1-80, Cl. 430-152.000.

McCullough, John F.: *See—*
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.

Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., to Tennessee Valley Authority. Production of ammonium potassium polyphosphates. T996,001, 7-1-80, Cl. 71-36.000.

Tennessee Valley Authority: *See—*
Sheridan, Richard C.; McCullough, John F.; and Frederick, Leland L., T996,001, Cl. 71-36.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brauer, Melvin; and Kroplinski, Thaddeus F., to N L Industries, Inc. Mineral oil extended polyurethane system containing a coupling agent for decontaminating and sealing the interior spaces of an insulated electrical device. Re. 30,321, Cl. 260-18.0TN.

Crossley, Jack; and Wilson, David H., to Manesty Machines, Ltd. Tabletting machines. Re. 30,319, Cl. 425-345.000.

Du Pont de Nemours, E. I., and Company: *See—*
Hammer, Clarence F.; and Sinclair, Harold K., Re. 30,322, Cl. 525-183.000.

Dushku, Victor A. Lumbering tool. Re. 30,316, Cl. 7-161.000.

Hammer, Clarence F.; and Sinclair, Harold K., to Du Pont de Nemours, E. I., and Company. Novel elastomeric graft copolymers. Re. 30,322, Cl. 525-183.000.

Hellige GmbH: *See—*
Lubbers, Dietrich W.; and Huch, Albert, Re. 30,317, Cl. 128-635.000.

Hochiki Kabushiki Kaisha: *See—*
Tomioka, Yukio, Re. 30,323, Cl. 250-385.000.

Huch, Albert: *See—*
Lubbers, Dietrich W.; and Huch, Albert, Re. 30,317, Cl. 128-635.000.

Klinecky, Ladislav; and Krmela, Stanislav, to Zbrojovak Vsetin, narodni podnik; and Vyzkumny ustav lykovych vlaken. Method of and apparatus for preparing a weft supply in a magazine for weft insertion in shuttleless looms. Re. 30,318, Cl. 139-452.000.

Krmela, Stanislav: *See—*
Klinecky, Ladislav; and Krmela, Stanislav, Re. 30,318, Cl. 139-452.000.

Kroplinski, Thaddeus F.: *See—*
Brauer, Melvin; and Kroplinski, Thaddeus F., Re. 30,321, Cl. 260-18.0TN.

Lowther, Frank E., to Union Carbide Corporation. Corona reaction method and apparatus. Re. 30,320, Cl. 204-176.000.

Lubbers, Dietrich W.; and Huch, Albert, to Hellige GmbH. Method and apparatus for determining the perfusion efficiency factor of animal tissue. Re. 30,317, Cl. 128-635.000.

Manesty Machines, Ltd.: *See—*
Crossley, Jack; and Wilson, David H., Re. 30,319, Cl. 425-345.000.

N L Industries, Inc.: *See—*
Brauer, Melvin; and Kroplinski, Thaddeus F., Re. 30,321, Cl. 260-18.0TN.

Sinclair, Harold K.: *See—*
Hammer, Clarence F.; and Sinclair, Harold K., Re. 30,322, Cl. 525-183.000.

Tomioka, Yukio, to Hochiki Kabushiki Kaisha. Smoke detector adapted to a smoke sensing apparatus. Re. 30,323, Cl. 250-385.000.

Union Carbide Corporation: *See—*
Lowther, Frank E., Re. 30,320, Cl. 204-176.000.

Vyzkumny ustav lykovych vlaken: *See—*
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Wilson, David H.: *See—*
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Jessel, Walter H., Jr.; and Duffett, William E., 4,562, Cl. 76.000.

E. G. Hill Co., Inc.: *See—*
Jelly, Robert G., 4,559, Cl. 28.000.

Jelly, Robert G., to E. G. Hill Co., Inc. Red rose seedling named Hiltaco. 4,559, 7-1-80, Cl. 28.000.

Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,561, 7-1-80, Cl. 74.000.

Jessel, Walter H., Jr.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 4,562, 7-1-80, Cl. 76.000.

Pan-American Plant Company: *See—*
Shoesmith, Leonard H., 4,563, Cl. 78.000.

Shoesmith, Leonard H., to Pan-American Plant Company. Yellow chrysanthemum named Medalist. 4,563, 7-1-80, Cl. 78.000.

Smith, George C. Myoporum plant. 4,560, 7-1-80, Cl. 54.000.

Weeks, O. L. Rose plant. 4,558, 7-1-80, Cl. 17.000.

Yoder Brothers, Inc.: *See—*
Jessel, Walter H., Jr.; and Duffett, William E., 4,561, Cl. 74.000.
Jessel, Walter H., Jr.; and Duffett, William E., 4,562, Cl. 76.000.

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Van Koert, John O. Table or the like. 255,629, 7-1-80, Cl. D6-177.000.

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Wright, Donald O. Tennis ball retriever. 255,698, 7-1-80, Cl. D21-206.000.

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Zuck, Robert K. Bean cutting frame. 255,634, 7-1-80, Cl. D7-43.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 1, 1980

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 3

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116 R 4,209,877

CLASS 17

52 4,209,878

CLASS 23

230 B 4,210,418
4,210,419
4,210,420
303 4,210,421

CLASS 24

248 R 4,209,879

CLASS 27

2 4,209,880

CLASS 28

243 4,209,881

CLASS 29

33.52 4,209,882
116 R 4,209,883
157.1 R 4,209,884
157.3 V 4,209,885
4,209,886
240 4,209,887
263 4,209,888
432 4,209,889
450 4,209,890
466 4,209,891
469 4,209,892
522 R 4,209,893
577 R 4,209,894
768 4,209,897
783 4,209,898
4,209,899
855 4,209,896
874 4,209,895

CLASS 30

162 4,209,900
233 4,209,901
276 4,209,902
302 4,209,903

CLASS 33

185 R 4,209,910

CLASS 34

9 4,209,911
10 4,209,912
21 4,209,913
27 4,209,914
48 4,209,915
58 4,209,916
149 4,209,917
182 4,209,918

CLASS 35

17 4,209,919

CLASS 37

55 4,209,920

CLASS 38

97 4,209,921

CLASS 40

155 4,209,922
158 B 4,209,923
301 4,209,924
359 4,209,925
437 4,209,926
607 4,209,927
610 4,209,928

CLASS 43

6 4,209,929
17 4,209,930
22 4,209,931
42.11 4,209,932
43.15 4,209,933

CLASS 44

1 C 4,210,423
15 R 4,210,422
62 4,210,424
72 4,210,425

CLASS 46

31 4,209,934
44 4,209,935
74 D 4,209,936
81 4,209,937
116 4,209,938
4,209,939
145 4,209,940
230 4,209,941
253 4,209,942

CLASS 47

1.4 4,209,943
59 4,209,944
84 4,209,945

CLASS 49

390 4,209,946

CLASS 51

7 4,209,947
92 R 4,209,948
151 4,209,949
267 4,209,950
290 4,209,951
415 4,209,952

CLASS 52

241 4,209,953
601 4,209,954

CLASS 53

54 4,209,955
396 4,209,956
453 4,209,957
475 4,209,959
502 4,209,960
553 4,209,958
588 4,209,961

CLASS 54

49 4,209,962

CLASS 55

68 4,210,426
96 4,210,427
223 4,210,428
279 4,210,429
344 4,210,430

CLASS 56

10.8 4,209,963
11.2 4,209,964

CLASS 57

5 4,209,965
6 4,209,966
58.72 4,209,967

CLASS 59

27 4,209,978

CLASS 60

39.04 4,209,979
274 4,209,981
325 4,209,982
4,209,983
328 4,209,984
337 4,209,985
403 4,209,986
413 4,209,987
431 4,209,988
517 4,209,980
527 4,209,989
640 4,209,990
641 4,209,991
651 4,209,992

CLASS 62

80 4,209,993
155 4,209,994
157 4,209,995
175 4,209,996
226 4,209,997
324 4,209,998
344 4,209,999
417 4,210,000
468 4,210,001

CLASS 64

32 F 4,210,002

CLASS 65

3 C 4,210,431
4 R 4,210,432
66 4,210,433
104 4,210,434
106 4,210,435
4,210,436

CLASS 66

116 4,210,003

CLASS 68

27 4,210,004
148 4,210,005
205 R 4,210,006

CLASS 71

28 4,210,437
34 4,210,438
90 4,210,439
98 4,210,440

CLASS 72

8 4,210,007
105 4,210,008
186 4,210,009
201 4,210,010
234 4,210,011
235 4,210,012
347 4,210,013
389 4,210,014

CLASS 73

61.1 R 4,210,015
116 4,210,016
139 4,210,017
155 4,210,018
158 4,210,019
169 4,210,020
170 R 4,210,021
290 R 4,210,023
362.5 4,210,024
421 R 4,210,025
425.6 4,210,026
432 R 4,210,027
598 4,210,028
705 4,210,029
861.17 4,210,022

CLASS 74

43 4,210,030
89.21 4,210,031
198 4,210,032
424.8 A 4,210,033
606 R 4,210,034

CLASS 75

24 4,210,441
60 4,210,442
123 K 4,210,443
124 4,210,444
4,210,445
148 4,210,446
171 4,210,447

CLASS 81

3 R 4,210,035
15.8 4,210,036
90 C 4,210,037

CLASS 82

11 4,210,038
18 4,210,039
19 4,210,040

CLASS 83

32 4,210,041
49 4,210,042
175 4,210,043
241 4,210,044
497 4,210,045
525 4,210,046
530 4,210,047
572 4,210,048
796 4,210,049
848 4,210,050
871 4,210,051
881 4,210,052

CLASS 84

1.01 4,210,053
1.19 4,210,054
383 R 4,210,055
392 4,210,056

CLASS 85

83 4,210,057

CLASS 89

12 4,210,058
132 4,210,059
192 4,210,060

CLASS 91

6 4,210,061
54 4,210,062
196 4,210,063
394 4,210,064
469 4,210,065
506 4,210,066

CLASS 93

1 F 4,210,067
8 R 4,210,068
36 M 4,210,069

CLASS 98

40 D 4,210,070
94 AC 4,210,071

CLASS 99

340 4,210,072
483 4,210,073
494 4,210,074

CLASS 100

35 4,210,075

CLASS 101

111 4,210,076
126 4,210,077
136 4,210,078
242 4,210,079
426 4,210,080
465 4,210,081

CLASS 102

8 4,210,082
18 M 4,210,083

CLASS 104

178 4,210,084

CLASS 106

18.17 4,210,451
18.18 4,210,452
56 4,210,453
4,210,454
90 4,210,455
92 4,210,456
97 4,210,457
287.23 4,210,458
308 N 4,210,459

CLASS 108

35 4,210,085

CLASS 110

173 A 4,210,086
346 4,210,087

CLASS 112

158 E 4,210,088
417 4,210,089

CLASS 113

54 R 4,210,090
113 D 4,210,091

CLASS 114

299 4,210,092

CLASS 116

222 4,210,093
255 4,210,094

CLASS 118

57 4,210,095
58 4,210,096
65 4,210,097
317 4,210,098
402 4,210,099

CLASS 119

17 4,210,100

CLASS 122

20 B 4,210,101
4,210,102

CLASS 123

1 A 4,210,103
52 M 4,210,107
65 S 4,210,108
76 4,210,109
122 D 4,210,115
259 4,210,104
277 4,210,105
319 4,210,110
414 4,210,111
489 4,210,106
4,210,114
504 4,210,116
4,210,117
571 4,210,112
574 4,210,113

CLASS 126

25 R 4,210,118
61 4,210,119
200 4,210,120
374 4,210,123
390 4,210,124
424 4,210,121
432 4,210,122
437 4,210,125
443 4,210,126
444 4,210,127
4,210,128
447 4,210,129
449 4,210,130

CLASS 128

1 R 4,210,131
4,210,132
6 4,210,133
24.1 4,210,134
57 4,210,135
200.24 4,210,137
204.21 4,210,136
214 E 4,210,138
260 4,210,139
266 4,210,140
272 4,210,141
272.1 4,210,142
287 4,210,143
4,210,144
305 4,210,145
4,210,146
327 4,210,147
335 4,210,148
419 D 4,210,149
421 4,210,150
4,210,151
422 4,210,152
635 Re.30,317
637 4,210,153
685 4,210,154
727 4,210,155
763 4,210,156

CLASS 131

8 R 4,210,157
10 R 4,210,158
21 D 4,210,159
194 4,210,160

CLASS 132

7 4,210,161
9 4,210,162
33 R 4,210,163
40 4,210,164

CLASS 134

7 4,210,460
11 4,210,461

CLASS 136

89 EP 4,210,462
89 PC 4,210,463

CLASS 137

102 4,210,165
271 4,210,166
375 4,210,167
454.5 4,210,168
487.5 4,210,169
493.4 4,210,170
501 4,210,171
504 4,210,172
512.3 4,210,173
528 4,210,174
564.5 4,210,175
573 4,210,176
613 4,210,177
625.5 4,210,178

CLASS 138

96 T 4,210,179

CLASS 139

384 B 4,210,180
452 Re.30,318

CLASS 141

392 4,210,181

CLASS 144

34 E 4,210,183
312 4,210,184
317 4,210,182

CLASS 145

76 4,210,185

CLASS 148

1.5 4,210,464
4,210,465
4,210,466
12 R 4,210,467
12.4 4,210,468
16 4,210,469
33.2 4,210,470
102 4,210,471
187 4,210,472
189 4,210,473

CLASS 149

19.2 4,210,474

CLASS 150

52 J 4,210,186

CLASS 152

347 4,210,187
353 C 4,210,188
361 FP 4,210,189

CLASS 156

110 A 4,210,475
112 4,210,476
203 4,210,477
242 4,210,478
273 4,210,479
308.4 4,210,480
357 4,210,481
415 4,210,482
443 4,210,483
542 4,210,484
577 4,210,485
601 4,210,486

CLASS 157

1.24 4,210,190

CLASS 160

354 4,210,191

CLASS 162

146 4,210,487
162 4,210,488
164 R 4,210,489
175 4,210,490

CLASS 164

4 4,210,192
4,210,193
16 4,210,194
57 4,210,195
152 4,210,196
416 4,210,197
433 4,210,198

CLASS 165

70 4,210,199
98 4,210,200
104 S 4,210,201
162 4,210,202
163 4,210,203

CLASS 166

270 4,210,204
271 4,210,205
294 4,210,206
330 4,210,207
352 4,210,208

CLASS 172

47 4,210,209
272 4,210,210
451 4,210,211
645 4,210,212

CLASS 174

59 4,210,772
72 A 4,210,773
140 R 4,210,774

CLASS 175

195 4,210,213
297 4,210,214
394 4,210,215

CLASS 177

134 4,210,216

CLASS 178

19 4,210,775

CLASS 179

1 E 4,210,778
2.51 4,210,779
15.55 T 4,210,781
18 ES 4,210,782
18 FC 4,210,783
100.1 PS 4,210,785
115.5 PV 4,210,786
146 H 4,210,784

CLASS 180

13 4,210,217
24.12 4,210,218
4,210,219
70 R 4,210,220
77 TC 4,210,221

CLASS 181

107 4,210,222
152 4,210,223

CLASS 182

207 4,210,224

CLASS 184

28 4,210,225

CLASS 187

29 R 4,210,226
4,210,227
73 4,210,228

CLASS 188

18 A 4,210,229

CLASS 190

43 4,210,230

CLASS 192

8 R 4,210,231
48.8 4,210,232
89 B 4,210,233
106.1 4,210,234

CLASS 193

37 4,210,235

CLASS 194

1 D 4,210,236

CLASS 198

425 4,210,237
687 4,210,238

CLASS 200

5 EA 4,210,787
42 T 4,210,788
61.45 R 4,210,789
144 B 4,210,790
164 R 4,210,791

CLASS 201

2.5 4,210,491
12 4,210,492

CLASS 203

8 4,210,493
10 4,210,494
22 4,210,495
46 4,210,496

CLASS 204

26 4,210,497
35 N 4,210,498
38 A 4,210,499
55 Y 4,210,500
129 4,210,501
151 4,210,502
158 R 4,210,503
176 Re.30,320
180 R 4,210,504
181 C 4,210,505
4,210,506
181 R 4,210,507
195 S 4,210,509
4,210,510
195 W 4,210,508
225 4,210,513
243 M 4,210,514
256 4,210,511
257 4,210,512
266 4,210,515
284 4,210,516

CLASS 206

45.13 4,210,239
45.31 4,210,240
172 4,210,241
231 4,210,242
332 4,210,243
373 4,210,244
440 4,210,245
461 4,210,246
494 4,210,247
525 4,210,248
632 4,210,249
4,210,250

CLASS 208

8 LE 4,210,517
10 4,210,518
49 4,210,519
57 4,210,520
89 4,210,521
111 4,210,522
139 4,210,523
4,210,524
212 4,210,525
230 4,210,526

CLASS 209

152 4,210,527

CLASS 210

4 4,210,528
22 A 4,210,529
38 B 4,210,530
51 4,210,531
136 4,210,532
4,210,533
220 4,210,534
222 4,210,535
321 R 4,210,536
323 T 4,210,537
333 A 4,210,538
391 4,210,539
497 R 4,210,540

CLASS 215

329 4,210,251

CLASS 219

10.49 R 4,210,792
10.55 B 4,210,795
10.55 F 4,210,793
4,210,794
137.63 4,210,796
225 4,210,797
243 4,210,798
541 4,210,799
544 4,210,800

CLASS 220

4 F 4,210,252
8 4,210,253
22 4,210,254
209 4,210,255
254 4,210,256
269 4,210,257
306 4,210,258
455 4,210,259

CLASS 221

278 4,210,260

CLASS 222

43 4,210,261
442 4,210,262
449 4,210,263
591 4,210,264

CLASS 224

48 A 4,210,265

CLASS 226

97 4,210,266

CLASS 227

10 4,210,267
81 4,210,268

CLASS 228

103 4,210,270
193 4,210,269

CLASS 229

1.5 B 4,210,271
7 R 4,210,272
17 B 4,210,273
49 4,210,274

CLASS 233

20 R 4,210,275
31 4,210,276

CLASS 235

92 AC 4,210,801
483 4,210,802

CLASS 236

49 4,210,277
4,210,278
4,210,279

CLASS 238

14 4,210,280
327 R 4,210,281

CLASS 239

11 4,210,282
4,210,283
75 4,210,284
251 4,210,285
302 4,210,286
542 4,210,287
597 4,210,288

CLASS 241

27 4,210,289
30 4,210,290
110 4,210,291
148 4,210,292

CLASS 242

18 A 4,210,293
72.1 4,210,294
125.1 4,210,295
198 4,210,296
201 4,210,297

CLASS 244

3.21 4,210,298
20 4,210,299

CLASS 246

430 4,210,300

CLASS 248

48.2 4,210,301
308 4,210,302
429 4,210,303

CLASS 249

22 4,210,304
191 4,210,305
196 4,210,306
202 4,210,307

CLASS 250

203 R 4,210,804
311 4,210,806
330 4,210,807
343 4,210,808
4,210,809
347 4,210,810
358 R 4,210,811
370 4,210,805
385 Re.30,323
416 TV 4,210,812
421 4,210,813
427 4,210,814
445 R 4,210,815
468 4,210,816
515 4,210,817
559 4,210,818

CLASS 251

31 4,210,308
35 4,210,309
61.1 4,210,310
129 4,210,311
258 4,210,312
306 4,210,313

CLASS 252

32.7 E 4,210,541
4,210,542
46.7 4,210,543
47.5 4,210,544
4,210,545
62.9 4,210,546
76 4,210,547
4,210,548
4,210,549
90 4,210,550
102 4,210,551
151 4,210,552
174.11 4,210,553
4,210,554
305 4,210,555
408 4,210,557
415 4,210,558
431 R 4,210,559
437 4,210,560
441 4,210,561

CLASS 254

8 B 4,210,314

CLASS 260

14 4,210,562
17.2 4,210,563
18 TN Re.30,321
29.6 B 4,210,564
29.6 TA 4,210,565
31.8 R 4,210,567
31.8 T 4,210,566
32.4 4,210,568
33.6 AQ 4,210,570
40 R 4,210,571
4,210,572
42.15 4,210,573
42.16 4,210,574
42.52 4,210,575
45.8 N 4,210,578
45.8 NE 4,210,576
45.8 NT 4,210,577
112 B 4,210,580
112.5 R 4,210,581
154 4,210,582
156 4,210,583
207.1 4,210,586
244.4 4,210,584
245.6 4,210,585
326 E 4,210,588
326.11 R 4,210,590
326.11 S 4,210,591
326.5 FL 4,210,589
328 EP 4,210,569
347.2 4,210,592
397.7 R 4,210,593
428.5 4,210,594
429.7 4,210,595
449 R 4,210,597
455 B 4,210,598
462 C 4,210,599
555 A 4,210,600
570 D 4,210,601
576 4,210,602
580 4,210,603
583 R 4,210,604
585 B 4,210,605
649 R 4,210,610
653.5 4,210,611

CLASS 261

120 4,210,613
124 4,210,614

CLASS 264

11 4,210,615
45.1 4,210,616
71 4,210,617
130 4,210,618
140 4,210,619
163 4,210,620
516 4,210,621

CLASS 266

182 4,210,315

CLASS 267

125 4,210,316

CLASS 269

328 4,210,317

CLASS 270

79 4,210,318

CLASS 271

3.1 4,210,319
108 4,210,320

CLASS 272

8 N 4,210,321
109 4,210,322
137 4,210,323

CLASS 273

1 R 4,210,324
24 4,210,325
26 A 4,210,326
73 R 4,210,327
85 R 4,210,328
106.5 B 4,210,330
120 R 4,210,331
157 R 4,210,332
4,210,333
162 R 4,210,334
238 4,210,335
258 4,210,336
264 4,210,337
313 4,210,329

CLASS 277

76 4,210,338
153 4,210,339

CLASS 280

43.17 4,210,340
79.1 A 4,210,341
636 4,210,342
668 4,210,343
709 4,210,344

CLASS 282

27.5 4,210,345

CLASS 283

8 B 4,210,346
35 4,210,347

CLASS 285

1 4,210,348

CLASS 290

52 4,210,819
4,210,820
53 4,210,821

CLASS 292

78 4,210,349
86 4,210,350

CLASS 294

1 BB 4,210,351
19 R 4,210,353
81 R 4,210,352

CLASS 296

1 S 4,210,354
19 4,210,355
84 A 4,210,356
84 B 4,210,357
100 4,210,358
190 4,210,362
210 4,210,361
216 4,210,360
222 4,210,359

CLASS 297

192 4,210,363
439 4,210,364
481 4,210,365

CLASS 299

2 4,210,366

CLASS 301

37 R 4,210,367

CLASS 303

3 4,210,368
116 4,210,369
118 4,210,370

CLASS 307

116 4,210,822
117 4,210,823
141 4,210,824
221 D 4,210,825
254 4,210,826
264 4,210,827
268 4,210,828
296 R 4,210,829
362 4,210,830

CLASS 308

9 4,210,371
189 R 4,210,372

CLASS 310

13 4,210,831
50 4,210,832
58 4,210,833
61 4,210,834
62 4,210,835
112 4,210,836
323 4,210,837

CLASS 313

198 4,210,838
218 4,210,839
4,210,840
221 4,210,841
403 4,210,842
4,210,843
479 4,210,844

CLASS 315

5.25 4,210,845
111.9 4,210,847
121 4,210,846
169.3 4,210,848
241 P 4,210,849
290 4,210,850

CLASS 318

257 4,210,851
459 4,210,852
630 4,210,853

CLASS 320

10 4,210,854
13 4,210,855
17 4,210,856

CLASS 322

28 4,210,857

CLASS 323

22 T 4,210,858
44 R 4,210,859
119 4,210,860

CLASS 324

51 4,210,862
72.5 4,210,863
204 4,210,864
207 4,210,865
222 4,210,866
308 4,210,861
323 4,210,867
4,210,868
349 4,210,869

CLASS 330

9 4,210,872
51 4,210,873
134 4,210,874
261 4,210,875

CLASS 331

94.5 G 4,210,876
94.5 H 4,210,878
94.5 PE 4,210,877

CLASS 332

9 R 4,210,879

CLASS 333

24.2 4,210,886
110 4,210,880
4,210,881
166 4,210,882
195 4,210,883
203 4,210,884
238 4,210,885

CLASS 335

6 4,210,887
207 4,210,888
4,210,889
281 4,210,890

CLASS 336

135 4,210,891

CLASS 337

161 4,210,892
407 4,210,893

CLASS 338

35 4,210,894
99 4,210,895
159 4,210,896

CLASS 339

8 R 4,210,373
14 L 4,210,374
4,210,375
17 LC 4,210,376
45 R 4,210,377
97 R 4,210,378
101 4,210,379
107 4,210,380
115 C 4,210,381
192 R 4,210,382
200 P 4,210,383

CLASS 340

58 4,210,898
146.3 E 4,210,899
149 R 4,210,900
310 A 4,210,902
310 R 4,210,901
347 AD 4,210,904
347 NT 4,210,903
575 4,210,905
659 4,210,906
754 4,210,908
763 4,210,909
785 4,210,907

CLASS 343

7.6	4,210,910
7.7	4,210,911
	4,210,912
123	4,210,913
715	4,210,914
786	4,210,915

CLASS 346

1.1	4,210,916
34	4,210,917
75	4,210,918
	4,210,919
	4,210,920

CLASS 350

16	4,210,385
19	4,210,384
96.31	4,210,386
187	4,210,387
214	4,210,388
321	4,210,389
357	4,210,390

CLASS 351

161	4,210,391

CLASS 354

21	4,210,392
23 D	4,210,393
234	4,210,394
	4,210,395

CLASS 355

12	4,210,396
15	4,210,397
54	4,210,398

CLASS 356

28.5	4,210,399
359	4,210,400
369	4,210,401

CLASS 357

5	4,210,921
24	4,210,922
30	4,210,923
38	4,210,924
46	4,210,925
70	4,210,926

CLASS 358

12	4,210,927
60	4,210,928
64	4,210,929
103	4,210,930
128.5	4,210,931
130	4,210,932
172	4,210,933
241	4,210,934
246	4,210,935
283	4,210,936

CLASS 360

6	4,210,937
10	4,210,938
14	4,210,939
33	4,210,940
48	4,210,941
65	4,210,942
70	4,210,943
74.2	4,210,944
108	4,210,945
131	4,210,946

CLASS 361

18	4,210,947
76	4,210,948
226	4,210,949
329	4,210,950
391	4,210,951

CLASS 362

17	4,210,952
189	4,210,953
303	4,210,954
321	4,210,955

CLASS 363

51	4,210,956
124	4,210,958

CLASS 364

105	4,210,957
200	4,210,959
	4,210,960
300	4,210,961
402	4,210,962
567	4,210,963
578	4,210,964

CLASS 366

76	4,210,402

CLASS 367

26	4,210,965
27	4,210,966
34	4,210,967
46	4,210,968
106	4,210,897
108	4,210,969
109	4,210,970
134	4,210,971

CLASS 368

10	4,209,977
71	4,209,972
76	4,209,970
	4,209,971
84	4,209,973
	4,209,974
186	4,209,975
187	4,209,976
250	4,209,969
273	4,209,968

CLASS 370

80	4,210,780

CLASS 375

117	4,210,777
120	4,210,776

CLASS 400

124	4,210,404
196.1	4,210,403

CLASS 403

158	4,210,405

CLASS 408

223	4,210,406

CLASS 414

407	4,210,407

CLASS 415

163	4,210,408

CLASS 417

241	4,210,409

CLASS 418

150	4,210,410

CLASS 422

61	4,210,622
101	4,210,623
264	4,210,624

CLASS 423

139	4,210,625
166	4,210,626
220	4,210,627
239	4,210,628
242	4,210,629
265	4,210,630
292	4,210,631
637	4,210,632

CLASS 424

80	4,210,633
101	4,210,634
114	4,210,635
177	4,210,636
180	4,210,637
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	4,210,639
	4,210,641
181	4,210,640
200	4,210,642
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239	4,210,644
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256	4,210,648
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274	4,210,660
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275	4,210,663
	4,210,664
	4,210,665
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281	4,210,667
298	4,210,668
305	4,210,669
324	4,210,670
	4,210,671

CLASS 425

345	Re.30,319

CLASS 426

43	4,210,672
53	4,210,673
107	4,210,674
233	4,210,675
238	4,210,676
272	4,210,677
321	4,210,678
564	4,210,679
641	4,210,680

CLASS 427

64	4,210,681
88	4,210,689
178	4,210,682
221	4,210,683
286	4,210,684
361	4,210,685

CLASS 428

35	4,210,686
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41	4,210,688
95	4,210,690
96	4,210,691
106	4,210,692
152	4,210,693
174	4,210,694
209	4,210,695
212	4,210,696
272	4,210,697
327	4,210,698
331	4,210,699
395	4,210,700
409	4,210,701
413	4,210,702
	4,210,703
414	4,210,704
500	4,210,705

CLASS 429

105	4,210,706
	4,210,707
181	4,210,708
250	4,210,709

CLASS 430

56	4,210,710
126	4,210,448
183	4,210,449
253	4,210,711
275	4,210,712
284	4,210,713
372	4,210,714
439	4,210,715
567	4,210,450
615	4,210,716
620	4,210,717

CLASS 431

160	4,210,411

CLASS 433

11	4,209,906
33	4,209,907
57	4,209,909
78	4,209,908
177	4,209,904
189	4,209,905

CLASS 435

41	4,210,718
	4,210,719
42	4,210,720
69	4,210,721
176	4,210,722
180	4,210,723
292	4,210,724

CLASS 455

95	4,210,870
137	4,210,871
610	4,210,803

CLASS 521

100	4,210,725
110	4,210,726
137	4,210,727
160	4,210,728

CLASS 525

6	4,210,556
88	4,210,579
183	Re.30,322
204	4,210,612
247	4,210,729
440	4,210,730
469	4,210,731
501	4,210,732
529	4,210,733

CLASS 526

65	4,210,734
119	4,210,735
142	4,210,736
152	4,210,738
185	4,210,737
325	4,210,739

CLASS 528

167	4,210,740
196	4,210,741
346	4,210,742
347	4,210,743
363	4,210,744

CLASS 536

26	4,210,745
27	4,210,746
60	4,210,747

CLASS 542

426	4,210,748
469	4,210,749

CLASS 544

21	4,210,750
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33	4,210,752
128	4,210,753
167	4,210,754
175	4,210,755

CLASS 546

15	4,210,756
52	4,210,757
92	4,210,758
312	4,210,759

CLASS 548

145	4,210,762
251	4,210,587
320	4,210,760
	4,210,761
350	4,210,763

CLASS 556

436	4,210,596

CLASS 568

345	4,210,767
385	4,210,606
	4,210,607
451	4,210,608
618	4,210,764
726	4,210,765
779	4,210,766
947	4,210,609

CLASS 585

250	4,210,768
379	4,210,769
474	4,210,770
701	4,210,771

CLASSIFICATION OF DESIGNS

D2—	80	255,616
	309	255,617
	322	255,618
	354	255,619
	378.2	255,620
	394	255,621
D6—	22	255,622
	62	255,623
	71	255,624
	73	255,625
	86	255,626
	157	255,627
	177	255,628
		255,629
	186	255,630
	190	255,631
	191	255,632
	244	255,633
D7—	43	255,634
	70	255,635
	101	255,636
	102	255,637
		255,638
	108	255,639
D8—	8	255,640
	52	255,641
	60	255,642
	74	255,643
	308	255,644
	370	255,646
	382	255,645
	387	255,647
D9—	10	255,648
	18	255,649
	48	255,650
	60	255,651
	115	255,652
	158	255,653
	169	255,654
	171	255,655
	177	255,656
	187	255,657
	219	255,658
		255,659
	285	255,660
	294	255,661
D10—	37	255,662
	64	255,663
	89	255,664
	96	255,665
		255,666
	108	255,667
D11—	04	255,668
	79	255,669
	86	255,670
	157	255,671
D12—	3	255,672
	63	255,673
	147	255,674
	180	255,675
D14—	11	255,676
	53	255,677
		255,678
	60	255,680
	64	255,681
	83	255,682
	96	255,683
		255,684
	99	255,685
D15—	139	255,686
	140	255,687
D16—	23	255,688
	42	255,689
	56	255,690
	59	255,691
D18—	25	255,692
	27	255,693
	28	255,694
D19—	77	255,695
D21—	132	255,696
	134	255,697
	206	255,698
	241	255,699
D22—	15	255,700
	24	255,701
	25	255,702
	27	255,703
		255,704
	28	255,705
D23—	42	255,706
	69	255,707
	78	255,708
	97	255,709
		255,710
		255,711
	146	255,712
D24—	10	255,713
		255,714
	27	255,715
	48	255,716
	53	255,679
	64	255,717
	99	255,718
D25—	16	255,719
	52	255,720
D26—	31	255,726
	60	255,721
D28—	8.1	255,727
	13	255,722
D30—	1	255,723
		255,724
	13	255,725

CLASSIFICATION OF PLANTS

P.—	17	4,558
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